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THE JOURNAL OF
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SOME DEFECTS OF CURRENT SALE VALUE AS THE BASIS FOR APPRAISAL

By VIRGIL P. LEE

SINCE farm mortgage banking became a business in this country some 60 years ago prevailing sale value, or market price, has been the mainstay of farm land appraisers. The system worked well during two periods of general increase in land values; it has brought serious trouble to lenders during two periods of declining land values.

Following the Civil War, the Middle West and the Southwest were developed rapidly and capital was needed in large quantities to purchase and equip new farms. During this period certain far-seeing individuals initiated the business of buying and selling farm mortgages. Usually the mortgage company took the mortgage from the farmer and sold it for a commission. Lands were liberally appraised; loans almost equal to the full market value of the property were often advanced. Mortgages were peddled in the older settlements in New England and along the Atlantic Seaboard.

The average price of farm lands in the United States increased rapidly after 1850. From 1850 to 1860 the increase was 46.5%; from 1860 to 1870, 11.8%; from 1870 to 1880, 4.2%; and from 1880 to 1890, 12%.[1] Every one was optimistic about future land values, and the farm mortgage companies developed what was later called the "farm mortgage craze," which involved the practice of making very liberal loans. In 1887 the legislature of Connecticut made an investigation of the purveyors of western farm mortgages, which resulted in the appointment of a "commissioner of foreign companies" who should require licenses of all mortgage companies operating in the state. Other eastern states adopted similar measures. Many of the companies were soon placed in the hands of receivers. Then in the panic of 1893 practically all of the companies were ruined. The average value of farm lands actually decreased 7.1% from 1890 to 1900.

After the 1893 crash, only about 15 of the original 167 companies renewed their

[1] H. C. Taylor, *Agricultural Economics*, (New York: Macmillan Co., 1923), p. 212.

licenses to sell mortgages in the East. But with the improvement of business conditions after 1896 and the general rise in farm land values which followed, these companies began to expand. During this period they attempted to improve their methods. In 1914 the Farm Mortgage Bankers' Association of America was organized for the general purposes of securing greater uniformity of practice among themselves and of supplying the public with information regarding their business.

The World War brought an enormous increase in farm land values based on enhanced prices of products. What had been a conservative policy during the 15 years since 1900 would certainly seem to be satisfactory as a permanent policy. Mortgage bankers and insurance companies had been lending 50% of the value of farm lands and had had very few foreclosures. In their appraisals they had come to center their investigations on current value or the market price of the land. They very carefully ascertained whether the land had been sold recently, the price for which it sold, or the price of surrounding farms. Certainly, if the land were conservatively valued and only 50% of the price were advanced the borrower could pay off the mortgage with little difficulty. In an emergency the mortgage could be foreclosed and the farm sold to recover the loan. It had been 20 years or more since we had had anything like a general decline in land values; we had almost forgotten that farm land values ever declined. In fact, it had become almost second nature to believe that land prices were constantly rising—slowly at times, but nevertheless surely.

On the basis of the boom in the price of farm products and the general optimism of the public, farm land prices in the United States went up an average of 70% from 1912-1914 to 1920.[2] In Texas the average price of farm land increased 74%; in Iowa and Minnesota 113%; in North Carolina 123%; in South Carolina 130%. So in 1919 and 1920 mortgage banks and insurance companies could lend more than twice as much per farm in some of these states as they could six years before and still lend on a seemingly conservative margin of 50% of the value. Nobody seemed seriously to question the permanence of the value.

In 1929, however, the average value per acre of farm land in the United States was only 16% higher than it was in 1912-1914, having declined about 32% since 1920. The average price in 10 states was actually less than before the war. The results are well known. Farm mortgage owners have become farm land owners by the thousands.

Farm mortgage bankers and life insurance companies are now in search of more scientific methods of appraisal. At their instigation short courses in land appraisal are being conducted in Iowa, Illinois, Nebraska and other states. The Mortgage Bankers' Association of America is actively encouraging these courses at the various agricultural colleges over the country. A group of the leading life insurance companies are conducting detailed studies of farm conditions with a view to determining proper policies regarding their enormous volume of farm mortgage loans.

The defects of current sale value as the chief basis of appraisal are inherent in our system of setting farm land prices. In 1917-1920, for instance, we not only capitalized the current earnings of land, we anticipated a further increase. Prevailing earnings of land would of themselves have caused a very considerable increase in land values, but we assumed

[2] United States Department of Agriculture, *Circular No. 101*, "The Farm Real Estate Situation, 1928-1929."

that earnings would increase during the next few years as they had during the past four years. The determination of land value by capitalizing current earning has its own shortcomings, aside from any anticipation of future increases in earnings.

It is probably safe to assume that the farm mortgage banker is interested primarily in the ability of the borrower to make his stipulated annual payments of interest and amortization of principal. If the banker could accurately estimate the annual paying ability of the borrower he would in fact have no interest whatever in the sale value of the farm. But since it is so difficult to make such an estimate, farm mortgage lenders have followed the practice of taking sale value as the most accurate indicator of the earnings of the land and therefore the ability of the borrower to make his payments. Sale value has also been used as an indicator of what price the land would bring, should the borrower default.

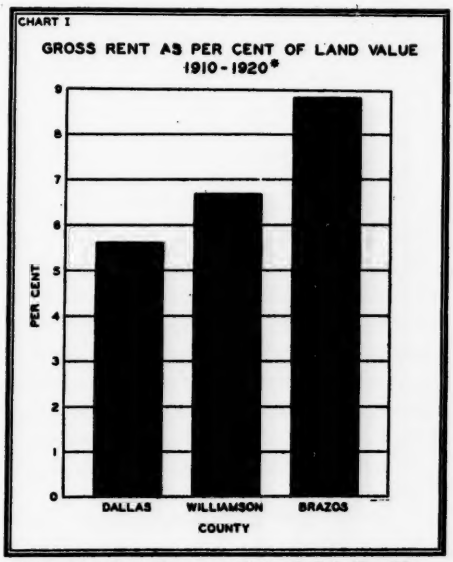
Purpose of Sale Value

We have learned during the past 10 years that a sale value current when the loan was made may vary greatly before the loan is collected. Average sale value for a long period of years would be a better indicator of what the land might bring under foreclosure. Also it must not be overlooked that foreclosures usually come during periods when the land market is at a standstill, and forced sales are always at a discount.

More important here is earnings of the land. If sale value is an accurate indicator of earnings, it should be a good basis for appraisal; and if not, it should be supplemented by other data, if used at all. Probably the best available measure of the actual earnings of farm land is rent. In the case of share rent it would be the average value of the crop turned over to the landlord, less taxes and expenses for upkeep. In the case of cash rent it would be the rent paid, less taxes and upkeep. Now if rent bears the same relation to the sale value of land all over the state, the banker might safely adopt a policy of lending a definite percentage of the appraised value of each farm; but such regularity of the ratio of rent to value does not seem to exist.

Ratio of Rent to Value in Different Regions

A study[3] of the relation of rent to value in three Texas counties for the 11 years 1910 to 1920, inclusive, indicates a wide variation of this ratio (Chart I). In Dallas County the average annual gross rent was 5.60% of the value of the farms; in Williamson County, 6.76%; in Brazos County, 8.80%. Thus if a mortgage bank accepted 50% of the sale price as the proper amount to lend in Brazos County, loans in Dallas County should be restricted to 32% in

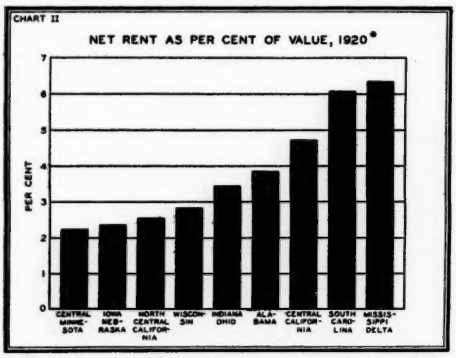


*Data from *Texas Experiment Station Bulletin* No. 318.

[3] Texas Agricultural Experiment Station, *Bulletin No. 318.*

order to bear the same relation to earnings.

Over a wider territory the variations in the ratio of earnings to value are still greater. A study made by the United States Department of Agriculture[4] of net cash rents paid on farm lands in 1920 indicates that net rent was only 2.2% of the market value of land in Central Minnesota, while it was 6.5% in the Mississippi Delta (Chart II). A banker



*Data from United States Department of Agriculture, *Bulletin* No. 1224.

who followed the policy of lending 50% of the value in the Mississippi Delta would have to restrict his loans in Central Minnesota to 18% in order to maintain the same ratio of earnings to the amount of the loan.

Ratio of Rent to Value over a Period of Years

But the accuracy of sale value as an indicator of earnings has been found to vary greatly from one period of time to another, as well as geographically. In periods of general prosperity the market price of farm lands is often far ahead of earnings. Thus the average value of a selected group of farms in Minnesota in 1910 was $58 per acre; in 1918 and 1919, $115—an increase of approximately 100%. Earnings, on the other hand, increased only 60%. If loans of 50% of the value were safe and desirable in 1910, loans in 1919 should have been restricted to about 40% on the basis of current earnings. The combined income available for the return on farm investment and for management in the United States has been estimated by the Department of Agriculture to vary from 0.5% in 1920 up to 5.2% in 1925 and back to 4.7% in 1928.[5] The average for the nine-year period was about 3.5% (Chart III).

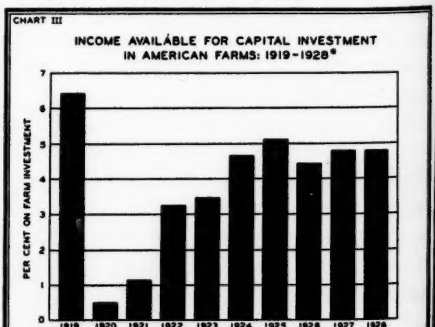
During the period 1910-1920 earnings on certain selected farms in Ohio increased 34%; sale value increased 57%. If 50% of the value was advanced in 1910, only 42% should have been advanced in 1920. Sale value on certain Iowa farms increased 165% during this 10-year period; earnings increased only 92%. A 50% loan in 1910 would have been equivalent to a 36% loan in 1920.

Comparing the ratio of earnings to value of farm lands in Ohio, we find that earnings were equivalent to 10% of the value in 1900, 6.4% in 1910, 5.8% in 1920.[6] That is, on the basis of earnings, if the mortgage banker could safely lend only 50% of the value in 1900, he could

[4] United States Department of Agriculture, *Department Bulletin No. 1224.*

[5] United States Department of Agriculture, *Circular No. 101*, p. 17.

[6] Address by E. H. Wiecking before Bankers' and Appraisers' Short Course, College of Agriculture, University of Illinois, November 8, 1929.



*Data from United States Department of Agriculture, *Circular* No. 101, p. 17. Income here includes reward for management.

lend only 32% in 1910 and 29% in 1920. In Iowa earnings were 7.7% of the value of land in 1900, 4.3% in 1910, and only 3.6% in 1920. The banker who restricted loans here to 50% in 1900 should have restricted them to 28% in 1910 and 18% in 1920. The extensive farm bankruptcies and foreclosures in many parts of Iowa since 1920 indicate that loans of 18% of the value of the land would probably not have been too conservative (Chart IV).

Desirability of Earnings as Basis for Appraisal

The practice of determining the amount to lend on a farm on the basis of its sale value seems to be based largely on the frequent sale of land in America. Our population has increased so rapidly and our country has developed so fast that aside from a few setbacks we have had a century or more of generally increasing land values. Naturally enough we have come to evaluate farm lands on the basis not of past earnings but largely on anticipated earnings. Hence the market price of land is usually several years ahead of what current and past earnings indicate that it should be. During a period of rapidly rising prices of farm products, such as 1917-1920, our anticipation of the future value of lands frequently developed into a frenzy of speculation. Instead of staying on a basis of past and current earnings, appraisers followed the lead of speculators and advanced more on the land than its sale price a few years later.

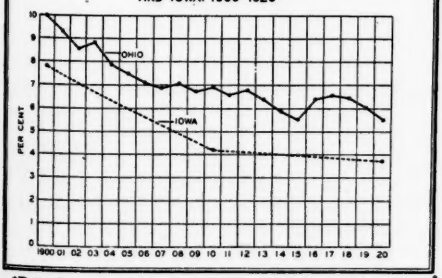
If you ask an Englishman the value of his farm, he will tell you it is worth so much a year. That is, instead of indicating its sale value he will indicate its annual rent. If a loan is made, the rent is looked upon as the source of payments, and a satisfactory ratio of say 2 to 1 determines the amount of the loan.

If farm mortgage bankers in this country adopted such a plan, the calculation would run something as follows: (1) the farm is 160 acres and it yields an average net rent of $700; (2) at a ratio of 2 to 1, which is considered by business corporations as a minimum ratio for safety, the loan should call for the annual payment of $350 on the amortization plan; (3) at the rate of 5½% and for 30 years, the loan would be about $4,000.

The appraiser will, of course, investigate soil, drainage, prices of farm products, and many other conditions in order to determine whether such earnings are likely to be maintained over a long period of years. But his immediate problem is the calculation of rent. If cash rent is common in the community, he will ascertain the net rent by deducting the average taxes, repair and upkeep of the farm. If share rent is common, as in Texas, he will calculate the gross value of the ⅓ of feed and ¼ of cotton which go to the owner on the basis of average production and average prices of products over a period of years. Then net rent will be arrived at by deducting taxes, repairs, and upkeep. A study made by the Department of Agriculture in 1920 indicates that net rent is about 2/3 of gross rent.[7]

CHART IV

GROSS RENT AS PER CENT OF LAND VALUE IN OHIO AND IOWA: 1900-1920*



*Data from an address by E. H. Wiecking, University of Illinois, November 8, 1929.

[7] United States Department of Agriculture, *Department Bulletin No. 1224.* Net rent figures were calcu-

(Footnote 7 continued on page 342)

This method is not new; it is common in corporation financing. When an investment banker attempts to prove to the public that the mortgage bonds of his client are safe and sound, he presents the ratio of annual earnings to the annual mortgage obligations, that is, annual interest and payment to sinking fund if a sinking fund is used. Many corporations have a record of annual earnings equivalent to three, four, five, or more, times the annual interest and payment to the sinking fund, which is equivalent to an installment on the principal of the bonds. Seldom is the emphasis placed solely on the relation of the bonded obligations to the total value of the physical property of the corporation. That long-term farm loans should be based on sale value of the property with little emphasis on earnings while the reverse is true of corporations is difficult to understand. Probably we departed from this system in corporation financing because so many corporations had physical property which had little or no earning value. The corporation, for instance, might build an enormous plant to produce buggies, only to have automobiles come along and make the plant almost valueless. Anyway, we have long followed the practice of looking to the amount and regularity of annual earnings of corporations before we put our money into their bonds.

Now that we have had a fresh demonstration during the past 15 years that the market value of farms is not an accurate indicator of annual earnings, we would probably do well to stick more closely to the original source of the annual payments required on the mortgage. If the appraiser can show that over a considerable period of time a farm has yielded a certain net rent and that conditions seem to warrant the assumption that such rent will continue, he can convince his bank and in turn the investors that a loan which calls for ⅓ or ½ of this net rent each year is thoroughly justified.

Summary

A few of these points deserve special emphasis. First, current sale value is not a good indicator of the price which can be obtained for land under foreclosure. Second, studies of farm land prices and earnings over a period of years indicate wide variation in the ratio of earnings to value. This fact is, in itself, sufficient ground for abolishing the custom of lending a fixed percentage of land value. Third, figures here presented show that a policy of advancing a fixed percentage of land value in any given year is unwise for long-term loans because of wide variation in the ratio of earnings to value in different sections of a state or of the United States. Finally, these studies indicate that farm-mortgage banks and insurance companies will do well to shift the emphasis in appraisals from current sale value to earnings. Current earnings are inadequate. The appraiser's calculations should extend over several years in the past, his estimate of the physical productivity of the farm and probable prices of farm products should extend over several years in the future. His rule-of-thumb method for determining the amount to lend on a farm should be shifted from a percentage of the value of the farm, to a ratio of annual obligations of the loan.

(Footnote 7 continued from page 341)

lated in nine widely scattered areas of the country. Average net rent was about 70% of gross, but this percentage varied from 57 in Central Alabama to 80 in San Joaquin Valley, California.

THE LOS ANGELES BUREAU OF POWER AND LIGHT: A CASE STUDY OF PUBLIC OWNERSHIP*

By MARTIN G. GLAESER

THE State of California should be interesting to readers of this *Journal* on account of the unusually clear illustration which it provides of interdependence between the economics of natural resources and the development of public utilities. Due to the generally arid climate, its economic life may be interpreted in terms of the success of efforts to secure control over available water resources. The exploitation of the state's resources in soil, minerals, especially petroleum, and forests, including even its vaunted climatic amenities with the famed California sunshine, would certainly have been slower and less intensive had it not been for the strenuous efforts to corral this most fundamental resource. Although the Los Angeles area in particular has attained a measure of fame as the Mecca of climate-conscious Iowans and other mid-westerners, the narrow range and prevailing mildness of temperatures are even more important for its citrus fruit industry. The monthly average and range of temperatures are shown on Chart I.

Water for domestic, irrigation, and industrial purposes is the *sine qua non* of economic life in this state. To this has been added the demand for power which a mechanized and urbanized civilization makes. The state's economic watchwords have thus been "water and power" ever since it ceased being an appanage of Spanish culture in America. In this first article of a series dealing with the development of the Los Angeles Bureau of Power and Light, the physiographic characteristics of the region will be sketched together with certain historical incidents, since these constitute the background upon which this drama of publicly-owned water and power utilities is unfolding.

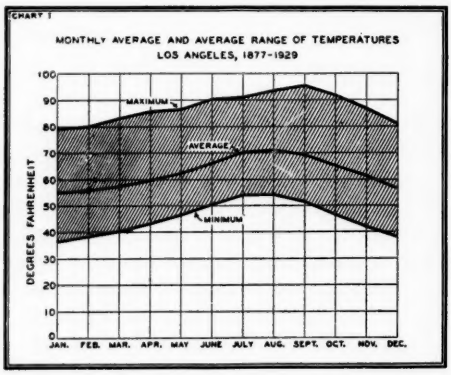
It has become customary to divide the state into a northern and a southern area. Although the state as a whole has been making rapid progress, southern California[1] has since 1900 been outstripping the northern region. Table I tells this story in terms of population growth.

In this phenomenal expansion it is clear that the City and County of Los Angeles have had a giant's share. As an industrial center this area enjoys a high degree of diversification. National manufacturers and wholesalers have here located branch factories, warehouses, and offices. The development of Los Angeles harbor, through the agency of the Federal government and the Municipal Harbor Commission, has so stimulated the tonnage of imports and exports as to make it the most important harbor of the Pacific coast. The city

**Editorial Note:* This is the first of a series of articles presenting the results of a study of the Los Angeles Bureau of Power and Light which was begun several years ago when the author was connected with the Institute. The study has been continued by Professor Glaeser as time and funds permitted. The author wishes to acknowledge the cordial cooperation of members of the Bureau and the financial assistance of Mr. F. W. Thum of Pasadena, California.

[1] Southern California is considered as consisting of the counties of Santa Barbara, Ventura, San Luis Obispo, Kern, Los Angeles, Riverside, San Bernardino, Orange, San Diego, and Imperial.

has also developed into an important regional center for the financing of local industry and of the crops character-



istic of the region. It is also the focal center of a very considerable oil production. So intense was the region's development that even the depression years of 1920 and 1921 did not register their usual effect upon the ordinary financial indexes of bank debits and bank clearings.

These economic values must have for their maintenance and development a sure foundation in the availability of adequate water resources. The struggle of the city to expand its water supply will be told in greater detail later. At this point it may be well, however, to give some idea of the available supply and of the demands made upon it. The location of the physiographic and other features referred to are shown on Chart II.

The gravel beds of the coastal plain on which the city lies provide a huge underground reservoir for the storage of water. A local authority has estimated that local sources within the city itself can supply a flow of 140 second feet.[2] To this should be added 276 second feet available from local sources within Los Angeles county. Additional supply must come from non-local sources. The Owens Valley aqueduct delivers 400 second feet from sources about 250 miles distant. It is estimated that 145 second feet of additional supply, not yet taken by the aqueduct, is available from the same source. From a still more distant point, the Mono Basin, beckons an undeveloped supply of 180 second feet. These sources could, if completely developed, insure a total supply of 1,141 second feet.

A few years ago the demand of the city with an estimated population in excess of 1,000,000 was taken to be 173 second feet. To this must be added a demand of 56 second feet from about half a million people living in the county. Irrigation demands from 240,000 acres were placed at 414 second feet, leaving a supply of

[2]The second foot is a unit of stream flow and is designed to measure the average number of cubic feet of water passing a given point in one second. The average multiplied by the number of seconds in the year will give the total annual cubic feet of discharge.

TABLE I. GROWTH OF POPULATION IN CALIFORNIA AND SELECTED SUBDIVISIONS, BY DECADES, 1880–1930.*

Year	Total for State	City of Los Angeles	Percentage of Total	Los Angeles County	Per Centage of Total	Southern California	Per Centage of Total
1880.....	864,694	11,183	1.29%	33,381	3.86%	79,114	9.15%
1890.....	1,213,398	50,395	4.15	101,454	8.36	227,232	18.72
1900.....	1,485,053	102,479	6.90	170,298	11.47	337,328	22.71
1910.....	2,377,549	319,198	13.42	504,131	21.20	808,408	34.00
1920.....	3,426,861	576,673	16.83	936,455	27.33	1,423,786	41.55
1930.....	5,642,282	1,231,730	21.83	2,199,557	38.98	3,025,421	53.62

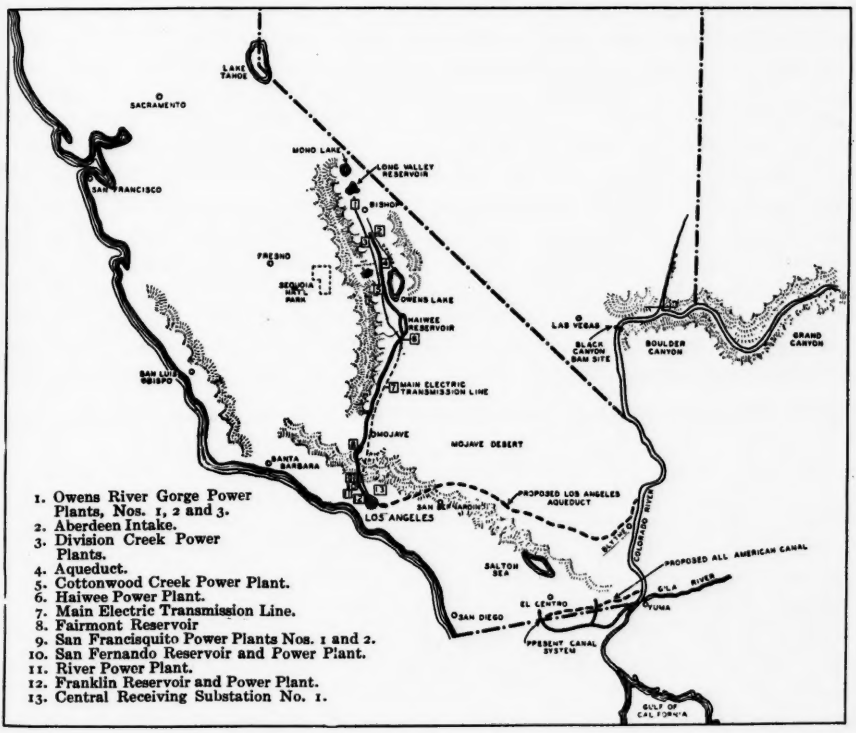
*United States Census figures.

498 second feet for additional uses. By making an allowance of 150 second feet for the following factors—a probable increase of irrigation demands, increased per capita consumption, and an adjustment for an underestimate of the population in the area at the time the estimate was made—the conclusion may be reached that about 350 second feet were available at that time to support a population increase of two millions. Calculations like the above have for years been the stock-in-trade of promoters and illustrate well how water resources figure as limiting factors in development.

The City of Los Angeles was organized in 1850 as the successor of the Spanish pueblo, Reina de Los Angelos (Queen of the Angels). In accordance with Spanish law and custom the question of priority in the use of water was resolved in favor of the common uses, that is to say, in favor of the domestic and irrigation uses. The newly organized city thus succeeded to a paramount legal right to the water flowing in the Los Angeles River from its source to the southern boundary of the city, to be used by it as needed for ordinary municipal purposes and the needs of its inhabitants. This legal right extended to both the surface and underground flow. The priority of utilization was applicable also to additional territory comprised within the city

CHART II

GENERAL LOCATION OF LOS ANGELES AQUEDUCT AND POWER PROJECTS

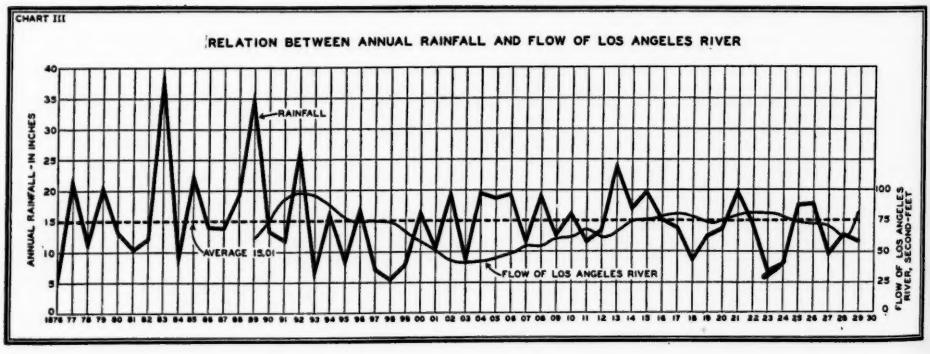


and could be extended to such new uses as the city's growth and advancing civilization made necessary.

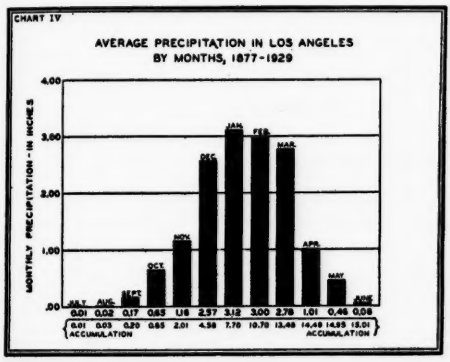
At first the water was made available for irrigation uses through a primitive system of ditches, which was later supplemented by a crude water supply system consisting of wooden and iron pipes. In 1868 when the city had a population of about 5,000, a 30-year franchise was granted to the Los Angeles City Water Company. This private utility extended the waterworks until in 1898, when the franchise expired, the system comprised 325 miles of iron pipe, varying in diameter from two to 48 inches. Meanwhile the population had increased to more than 100,000. Beginning with an annual gross revenue of about $20,000, the water revenues had increased to about $425,000. A period of more rapid population growth beginning about 1900, coupled with one of those recurring periods of drought to which the region is subject and with the inactivity of the company in constructing new facilities, brought the conviction that the private supply should be owned and operated by the public. A negotiated price of $2,000,000 was fixed for the complete system of ditches, tunnels, reservoirs, distribution system, pumping plants and infiltration galleries. Bonds to complete the purchase were voted in 1901 with a majority of five to one. On February 13, 1902, a municipal organization known as the Board of Water Commissioners was set up which proceeded to extend the system in all directions by construction and the purchase of other private systems.

The new management was conservative. William Mulholland, who had served the private company in the capacity of engineer, was retained as superintendent together with the old personnel. Civil service principles were applied in the operation of the works. The shortage of water led to the rapid introduction of meters and the substitution of meter rates for flat rates, in order to check the reckless waste of water. In 1901 Los Angeles was using more water per capita than any other city in the United States. Gradually the per capita consumption was reduced until it seemed that the available supply might suffice for a population of 220,000.

From the outset the large city area of 43 square miles and the dispersion of settlement caused a disproportion in the miles of pipe to population served. As commented on in the first report of the Board: "The city early acquired the inconvenient habit of growing in spots, first in one locality and then another, jumping over broad intervals of space just as eligible for residence purposes



between the two, in a manner most exasperating to those who had to follow up these capricious movements with the necessary public utilities." The elevation to which water had to be pumped constituted and still is a distressing problem. Other insistent and persistent problems centered in the facts that the peak demand required storage and that the difficulties of financing expansion by means of bond issues forced a policy of extensions through earnings of the plant alone.



Rainfall and run-off are such important conditions in conserving and using the available water supply that the relevant facts will be briefly reviewed. The moisture falling as rain or snow upon the mountains to the north of the coastal plain on which lies the city is subject to rapid run-off but is also absorbed rapidly by the detritus of the valleys. The gravel beds in the plain afford convenient underground storage by retaining the water whence it may be recaptured through wells. Rainfall records beginning in 1877 indicate that the water supply is markedly cyclical and is reflected in the variability of the surface and subsurface flow of the Los Angeles River. The available facts have been set forth on Chart III. The development of the water supply thus involves tunnelling the river to capture the supply and storing the surplus of periods of abundance.

Another characteristic of precipitation in this area is shown on Chart IV. Plotted as an average for a period of 52 years, the precipitation by months is shown. A glance at the chart will indicate that the five months from May to September constitute the period when irrigation requirements are heaviest, while the four months from December to March normally represent the period when over ⅔ of the annual precipitation occurs which must be stored in anticipation of the heavy demand later.

By 1904 pumping operations by the city and by the irrigators and ranchers in the surrounding area had lowered the plane of saturation (water table). Litigation was begun in order to secure adjudication of the city's prior right to the available supply. Even a favorable issue in the suit for the city could not be regarded as a permanently satisfactory solution because the growth and prosperity of the city were dependent in large part upon the success of agricultural operations in the city's hinterland. It was recognized that to divert water supply from the tributary agricultural areas was robbing Peter to pay Paul. The report of the Board of Water Commissioners in 1904 thus referred to the fact that the time had come when the flow of the Los Angeles River would have to be supplemented from some other source. Accordingly the Board authorized an investigation of all available water resources by its superintendent and J. B. Lippincott, an hydraulic engineer. The report covered exhaustively the hydrography of Southern California and came to the conclusion that no adequate water supply could be obtained by the city in this area alone.

Early in 1905 a solution of the water supply problem was suggested to the municipal authorities by Fred Eaton, a former Mayor and City Engineer. His plan was to bring to the city water which was 250 miles away and which flowed down the eastern slope of the Sierra Nevada mountains, forming the Owens River and in turn emptying into Owens Lake, a dead sea of the Inyo desert. After a detailed study of the proposal by Mulholland and others, who found that the construction of an aqueduct and reservoir system was feasible from every point of view, an election was called to vote $1,500,000 in bonds for the purchase of land and water rights in the Owens River Valley. The bond issue carried overwhelmingly, as did another issue in 1907 for $23,000,000 for the construction of the aqueduct. Active construction of the permanent works was begun in October, 1908. The actual delivery of the first water by the aqueduct to the San Fernando reservoir occurred on November 5, 1913, marking the inauguration of a municipal project, the cost of which came within the original estimate of $24,485,000 and on which practically all the work was done by the municipality's own construction organization. When the gates at the south portal of the terminal tunnel were opened and a flood of clear water plunged down the cascade, Mulholland, in presenting the water to the people of Los Angeles, said in what is probably the shortest dedicatory speech on record: "There it is; take it."

The course of the aqueduct and certain of the more significant features are indicated on Chart II. It is there shown that the opportunity to develop hydroelectric energy along the line of the aqueduct and on certain natural streams tributary to the aqueduct water supply have been utilized. It is at this point that the history of the Bureau of Power and Light had its inception.

Power developments along the aqueduct itself are made possible by the fact that differences in elevation between the source of the water in Owens Valley and the place of its utilization in the Los Angeles area are greater than the necessary gradient for sustaining a gravity flow of water in the aqueduct. These excess differences in elevation occur at four points along the aqueduct (for location see Chart II), the available "head" and distance from the city being as follows:

Location	Difference in Elevation	Distance from City
Below Haiwee Reservoir.....	190 ft.	162 mi.
San Francisquito Canyon.....	940 ft.	47 mi.
San Francisquito Canyon.....	530 ft.	40 mi.
Below San Fernando Reservoir.	300 ft.	25 mi.

The total gross head available for power production was thus 1,960 feet with a constant and assured flow of water between 400 and 430 second feet. In addition there had already been developed certain minor power sites on Cottonwood and Division creeks, the energy to be used for construction purposes. In conjunction with aqueduct power, these existing developments and other opportunities on the same and other creeks tributary to the Owens River, together with opportunities for the development of power along the Owens River Gorge below the Long Valley reservoir site acquired by the city, would be sufficient, when fully developed, to deliver about 200,000 horsepower at the city at an average load factor of 55%. In order to develop aqueduct power, it was deemed necessary to provide the Fairmont regulating and storage reservoir above the two most important power sites in San Francisquito Canyon,

and the Dry Canyon regulating reservoir below. It was contemplated that these regulating and storage reservoirs, together with others proposed, would not only provide against shortage of water during dry periods but would also make possible daily variations in the flow of water so as to take care of peak power loads and make unnecessary auxiliary steam plants for emergencies or for carrying peak loads.

Funds for the construction of these power developments were authorized in the amount of $3,500,000 in April, 1910. In accordance with the provisions of the Los Angeles charter, the Board of Public Works had charge of the expenditures of all moneys derived from the sale of both aqueduct and power bonds. The actual construction organization was placed in charge of William Mulholland, as chief engineer, who also continued to function as Chief Engineer and Superintendent of the City Water Department. In this dual capacity, Mr. Mulholland was responsible to the Board of Public Works for construction of the aqueduct and to the Board of Public Service for management and operation of the water works. In September, 1909, the Board of Public Works created the Bureau of Los Angeles Aqueduct Power to carry out the power developments. Mr. E. F. Scattergood, who had served as Electrical Engineer of the aqueduct, was appointed Chief Electrical Engineer of the new bureau. At about the same time a consulting board of engineers was provided for, made up of mechanical and electrical engineers of national reputation, to investigate, assist, and approve general plans and detailed specifications for the development of hydro-electric power, its transmission to the city, and its distribution within the city.[3]

[3] The members of this board were W. F. Durand, O. H. Ensign, and Harris J. Ryan.

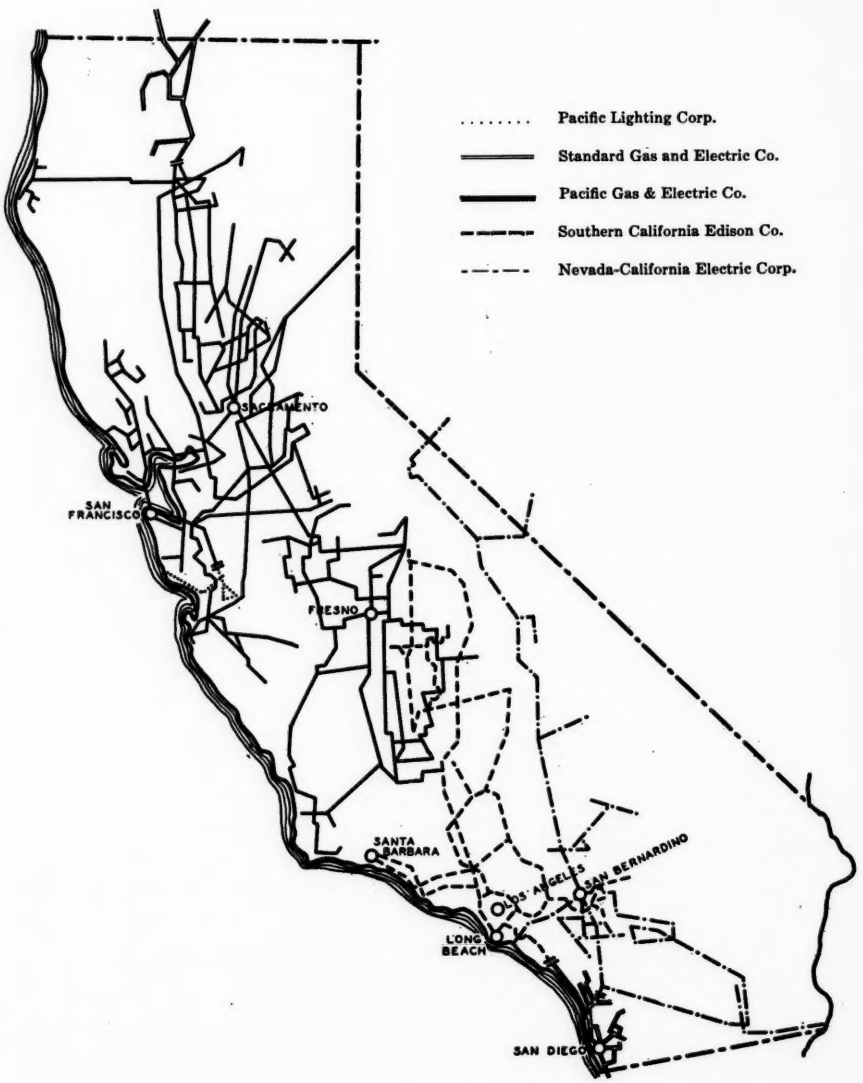
The first issue of $3,500,000 of power bonds proved inadequate for the power developments as originally planned. Increased authorization of power bonds had, however, to await a charter amendment in March, 1911. Funds did not become available until April, 1912, the delay being due principally to court proceedings. There was no material opposition to the public development of a water supply for the city; but the public development of a power supply incidental to the aqueduct met determined opposition chiefly from the private utilities then supplying the city. As the city's program developed from one contemplating only the bringing of aqueduct power to the city into one which had in mind the retail sale of the energy over a municipally owned distribution system, the opposition became more intense. On two occasions, however, the vote could be interpreted as favorable to municipal distribution either by purchasing private lines or by the installation of a competing municipal system. Proceedings to bring about municipal distribution were begun in September, 1911; but long delays from political and legal obstructions and lengthy negotiations with the local power companies deferred the final authorization of additional power bonds in the amount of $6,500,000 to May, 1914.

The first installment of power generating works was the development of 37,000 horsepower at San Francisquito Power Plant No. 1, the construction of the necessary 100,000-volt transmission lines and switching station and the construction of a central receiving sub-station within the city. Construction of the electric works provided for by the first bond issue having been completed by December, 1914, the Board of Public Works turned over the properties to the Department of Public Service. In December, 1913, the Los Angeles aque-

duct and its appurtenant properties had already been transferred to this department. An amendment of the city charter in 1911 had created the Board of

CHART V

LOCATION OF PRINCIPAL TRANSMISSION LINES
CALIFORNIA, 1928*



*Reproduced from map showing transmission lines in California, compiled by Pacific Gas & Electric Co. for 1928, and corrected for recent changes.

Public Service Commissioners and given it full charge of the operation, maintenance, and extension of all works having to do with the production and distribution of water and power. Within the department there were created the Bureau of Water Works and Supply with Mulholland as Chief Engineer, and the Bureau of Power and Light with Scattergood as Chief Electrical Engineer.

TABLE II. INSTALLED CAPACITY OF POWER PLANTS OWNED BY THE CITY OF LOS ANGELES, 1928

Name and Location of Plant	Installed Capacity (in kilowatts)
Power Bureau Plants	
San Francisquito No. 1	47,656
San Francisquito No. 2	35,000
San Fernando	7,000
Franklin Canyon	2,500
River Power	3,600
Total, Power Bureau	95,756
Water Bureau Plants	
Big Pine No. 3	4,000
Cottonwood No. 1	1,875
Division Creek No. 1	162
Division Creek No. 2	750
Haiwee	1,320
Total, Water Bureau	8,107
Grand Total, Both Bureaus	103,863 Kw.

Although the development of the Bureau of Power and Light as an electric utility will be followed in considerable detail in later articles, this prefatory statement ought perhaps to give a brief picture of the present status of the electric power generating works of the state as a whole and of the region with which we are principally concerned. For this purpose Chart V has been prepared showing the location of the principal transmission lines of the state, owned and operated by private utilities in 1928. These lines constitute an interconnected network for sending hydro-electric and carbo-electric energy from about 145 power plants—the hydro-electric plants being located primarily in the Sierra Nevada mountains—to the principal consuming areas. Disregarding the lesser utilities, it can be seen that six controlling corporations produce and distribute the electric energy of the state. To these should be added the two steam plants operated by the Los Angeles Gas & Electric Company which distributes energy locally. The transmission lines owned by the City of Los Angeles are shown on Chart II, one supplying aqueduct power for its distribution system in the city and another supplying energy from its Owens Valley power plants to the inhabitants in the valley, the surplus going to the Nevada-California Power Company.

The installed capacity of the city's power plants in 1928 is shown in Table II, divided between the power plants under the supervision of the Bureau of Power and Light and those coming within the purview of the Bureau of Water Works and Supply. The relative impor-

TABLE III. INSTALLED CAPACITY OF CENTRAL STATION POWER PLANTS IN CALIFORNIA, 1928.

Owner	Installed Capacity (in kilowatts)
Pacific Gas & Electric Co.	670,300
Great Western Power Co.*	161,600
San Joaquin Light & Power Corp.*	171,650
Southern California Edison Co.	779,200
Los Angeles Gas & Electric Corp.	105,000
Southern Sierras Power Co.	69,510
San Diego Consolidated Gas & Electric Co.	46,000
California-Oregon Power Co.	58,600
Feather River Power Co.	50,000
City of Los Angeles	103,863
City and County of San Francisco	83,000
City of Pasadena	34,500
Irrigation districts and water users' associations	51,810
Miscellaneous private companies	17,640
Total Installed Capacity	2,402,673
Installed capacity, public plants	273,173
Installed capacity, private plants	2,129,500

*In 1930, these companies were absorbed by the Pacific Gas & Electric Co.

tance of the power producing capacity of the city's plants in 1928 as contrasted with all other power producers in the state, both public and private, appears from Table III.[4]

In contrast with these current data, the city of Los Angeles in 1914 had made only a beginning in the development of its power resources along the aqueduct, although aqueduct water had been pouring into the city since late in 1913. The most immediate effect upon the city was a tremendous growth in area due to the annexation of surrounding territory, particularly areas requiring aqueduct water for irrigation purposes. The development of the Los Angeles harbor, the opening of the Panama Canal, the systematic promotion of the city as a resi-

[4] These data do not afford an indication of the relative importance of the Los Angeles electric utility because most of the energy distributed is purchased power.

CHART VI

VARIOUS GROWTH CURVES FOR LOS ANGELES CITY AND COUNTY

FIGURE 1. AREA GROWTH REPORTED BY CITY ENGINEER

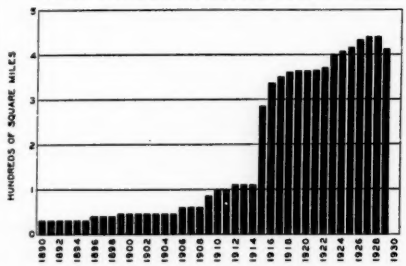


FIGURE 2. POPULATION AS REPORTED BY U. S. CENSUS

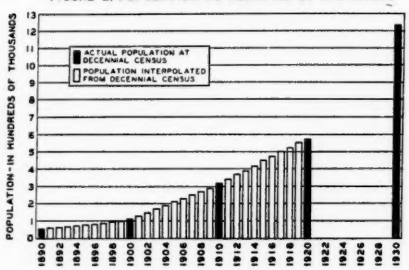


FIGURE 3. TONNAGE STATISTICS, PORT OF LOS ANGELES

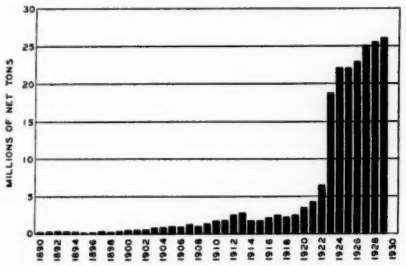


FIGURE 4. ASSESSED VALUATION REPORTED BY COUNTY AUDITOR

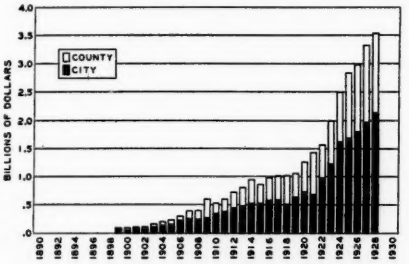


FIGURE 5. DOMESTIC CONSUMPTION OF WATER MEAN DAILY AVERAGE

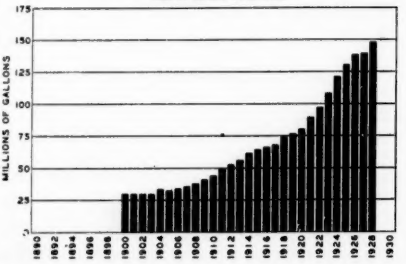
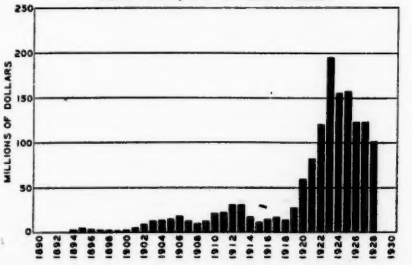


FIGURE 6. BUILDING PERMITS REPORTED BY BUILDING DEPARTMENT, CITY OF LOS ANGELES



dential, commercial and industrial center and finally the development of important oil fields in the vicinity in 1921, ushered in an unprecedented period of growth along many lines. The more significant of these indexes of growth up to the present time are shown on Chart VI.

Under such circumstances it is not surprising that the fears as to the adequacy of the water supply should have been revived. A series of dry years, of which the year 1924 represents a particularly aggravated sample, brought on renewed agitation for securing additional water supply from outside sources. In this movement the city has been joined by other communities in southern California and their efforts are now directed toward bringing in water from the Colorado River. One of the probable routes of a proposed Colorado River aqueduct is shown on Chart II. The generation of hydro-electric power at a power and reservoir site in Black Canyon is an integral part of a plan which has now received congressional sanction. The plan also contemplates flood protection for lands in the lower reaches of the river, particularly for lands in the Imperial Valley. Chart II also shows the location of these features together with the course of the present Imperial irrigation canal and a proposed All-American canal, which will avoid crossing the boundary of the United States. With these developments, the quest of the Los Angeles area for additional water resources, inevitably accompanied by development of power, passes on to a national stage in which it has challenged the attention of the entire country.

THE SKYSCRAPER: BOON OR BANE?

By EUGENE HENRY KLABER

ENDLESS controversy has been waged about the economic worth of the skyscraper. Its proponents have touted it as a solution of almost all our city ills. Its opponents lay at its door all the inconveniences and congestion that arise in a metropolis. Extremists seldom make a scientific analysis before coming to their conclusions.

It is with peculiar pleasure that we open a volume on the skyscraper, in which the authors have been painstaking in their search for facts. Whether or not we agree with their conclusions, or are satisfied that their investigation has been sufficiently broad, Messrs. Clark and Kingston have earned the gratitude of every community for the enormous step in advance which they have made in the study of the skyscraper.

Their book, *The Skyscraper, A Study of Its Economic Height*,[1] is a consideration of the cost of and return on investment in high buildings, in relation to land cost. They have taken a land value of $16,200,000 and determined what return would result from the erection of buildings 8, 15, 22, 30, 37, 50, 63, and 75 stories high. The plot is assumed to be in the Grand Central Zone in New York; it is 200 feet by 405 feet, surrounded on all sides by streets, and they use a value of $200 per square foot, which is not in excess of what may be found in that highly advantageous section. Experts were consulted on many phases of the cost as well as on the properly assumable returns.

The authors have not been content with assumed cubic foot costs. Their costs were determined by actually designing buildings of the varying heights they considered, and making at least an outline specification of materials and equipment. All of the buildings designed are in conformity with the existing setback and area requirements of the Zoning Ordinance of the City of New York.

The book gives evidence of the most painstaking consideration of the cost of separate trades, and valuable graphs are presented showing those items whose cost per rentable square foot of area increases as added stories are planned; those which decrease; and those which remain about constant. Allowance has even been made for the higher degree of interior finish which is usually installed in the very highest buildings, and credit given for the fact that in the lower and less pretentious edifices, marble wainscoting may be omitted in the corridors and less money spent on the decoration of the lobby. The questions of rentals, operating costs, and taxes have been considered and, we may presume, with the same care that marks the rest of the study. So strong is the impression of scholarly research into cost and return, that the reader readily accepts them as correct, and for our purposes we will assume that they are. They find that with the land cost and size of lot they have assumed, the best return on the money invested is produced by a building 63 stories high.

Following their study of the buildings they have designed, the authors devote a number of chapters to the refutation of certain objections which have been raised to skyscrapers. In these chapters the ground is less secure under

[1] New York: American Institute of Steel Construction, Inc., 1930.

their feet, and they are sometimes guilty of accepting conclusions without that degree of careful consideration which marks the remainder of their work. In their final chapter they summarize their conclusions as follows:

"1. The claim that the skyscraper is an economic fallacy is without foundation. Given the high land values in the central business sections of our leading cities, the skyscraper is not only the most efficient, but the only economic utilization of certain strategic plots. An exhaustive investigation of possible alternatives for the development of a specific plot of appropriate size and location in the Grand Central Zone in New York City has conclusively demonstrated that the factors making for diminishing returns in the intensive development of such plots are more than offset by the factors making for increasing returns until a great height is reached, thus establishing the point of maximum economic return or true economic height for such sites at an unexpectedly high level. True economic height is the resultant of a great many variable factors, of which the two most important are the size of the plot and the value of the land. Such economic height must be determined as an individual problem for each particular site.

"2. One of the important real estate trends of the future in central business districts will be the development of very large plots, probably entire city blocks, with single huge structures rising to very great heights. Other important trends will include the increasing specialization of business districts and of office buildings, and the development of multi-purpose structures in which the tenant will be able to satisfy practically all his wants without passing beyond the four walls of the building.

"3. Flat level or arbitrary restrictions upon building height would result in reduced business efficiency, in substantial declines in land values in the central districts not fully compensated elsewhere, and in a serious readjustment of the whole tax structure of the city economy generally.

"4. Not only does the skyscraper make possible the maximum economic return from the private owner's standpoint but it does so primarily because it performs efficiently an important economic function from the public viewpoint. Measured by its contribution to public welfare, it deserves to rank with the telephone and the automobile as one of the great modern American inventions.

"5. Despite frequent claims to the contrary the tall building does not in itself throw an increased monetary burden upon the community for the provision of the ordinary civic utilities . . .

"6. While sunlight and fresh air may not be ideally protected in a few of the lower floors of all high buildings and on the street surfaces of all high building districts, conditions in the upper floors of modern skyscrapers are far superior to those found in low buildings . . .

"7. Public safety is not endangered by the tall building built to the standards of a modern building code. The record of the modern skyscraper in regard to hazard from fire and natural catastrophe has been quite exceptional . . .

"8. The effect of the tall office building upon traffic congestion has, to say the least, been seriously exaggerated. It is not *the* cause nor even the *major* cause of such congestion. Compared with some other types of buildings and with the automobile it is a minor offender. . . ."

With the reservations made in Paragraph 1, it is difficult to see how the authors can make so sweeping a statement as that contained in the first sentence of Paragraph 4. But rather than leave this matter in the realm of disputation, let us examine figures which they themselves have presented and see whether any conclusions can be drawn from them.

It will be noted that in Table I the land costs are set up in conjunction with the building. This is, of course, very disadvantageous to the lower buildings. No one would be tempted to erect a building on land 3½ times its value, as is the case with the eight-story building. At 75 stories the building cost is about 1⅓ times the cost of the land. If this table is conclusive in anything, it is in showing what is probably the most desirable proportion of land cost to

TABLE I. SUMMARY OF INVESTMENT COST, GROSS AND NET INCOME, AND RETURN UPON INVESTMENT.*

(Assuming land value at $200 per square foot)

	8-Story Building	15-Story Building	22-Story Building	30-Story Building	37-Story Building	50-Story Building	63-Story Building	75-Story Building
INVESTMENT				(In thousands of dollars)				
A. Land (81,000 sq. ft. at $200)	$16,200	$16,200	$16,200	$16,200	$16,200	$16,200	$16,200	$16,200
B. Building	4,769	7,307	9,310	11,775	13,808	16,537	19,390	22,558
C. Carrying Charges:								
1. Interest during construction:								
(a) Land (6% on cost for full period)	810	972	1,134	1,296	1,458	1,620	1,780	1,944
(b) Building (6% on cost for half period)	119	219	326	471	622	826	1,065	1,353
2. Taxes during construction—Land	292	350	408	466	524	584	642	700
3. Insurance during construction	3	5	8	12	21	35	65	95
Total Carrying Charges	$ 1,224	$ 1,546	$ 1,876	$ 2,245	$ 2,625	$ 3,065	$ 3,552	$ 4,092
D. Grand Total Cost	22,193	25,053	27,386	30,220	32,633	35,802	39,142	42,850
Total assignable to land	17,302	17,522	17,742	17,962	18,182	18,404	18,622	18,844
Total assignable to buildings	4,891	7,531	9,644	12,258	14,451	17,398	20,520	24,006
INCOME								
E. Gross Income	1,819	2,780	3,483	4,181	4,755	5,581	6,302	6,901
F. Expenses:								
1. Operating	311	482	592	723	814	942	1,058	1,213
2. Taxes	479	541	591	653	725	774	846	926
3. Depreciation	95	146	186	235	276	331	388	451
Total Expenses	$ 885	$ 1,169	$ 1,369	$ 1,611	$ 1,795	$ 2,047	$ 2,292	$ 2,590
G. Net Income	934	1,611	2,114	2,570	2,960	3,534	4,010	4,311
NET RETURN								
H. Net Return on Total Investment	4.22%	6.44%	7.73%	8.50%	9.07%	9.87%	10.25%	10.06%
I. Increase in Investment from last Addition of Stories	.....	$ 2,860	$ 2,833	$ 2,834	$ 2,413	$ 3,169	$ 3,340	$ 3,708
J. Increase in Net Income Resulting therefrom	.....	677	503	456	390	574	476	301
K. Net Return on Increase in Investment	.....	23.69%	21.51%	16.09%	16.15%	18.13%	14.25%	8.12%

* Clark and Kingston, *op. cit.*, p. 21.

building cost, which in this case, at 63 stories, is about 91%. The assumption of a single land cost for all the buildings considered merely demonstrates that for that particular land value the 63-story building is the optimum. This is demonstrated, and only this. The assumption that the land value is fixed is also debatable. A marked increase or decrease in land value would mean that the 63-story building would no longer be the best for this plot, and a higher or a lower building would be preferable, depending on whether the land value went up or down.

Let us consider the buildings independent of the land and see, from the figures presented, what will be available to pay for taxes on land, occupational costs, and profit after deducting all charges for operation, taxes on building, and depreciation. In Table II all figures presented are derived directly from those given by the authors, except the taxes on the building, which we have pro-rated between land and building, as the New York practice is to levy the tax at a fixed percentage on the total assessment.

Examining this table we note the following:

1. As the building is successively made higher the percentage of gross income to total investment in building constantly decreases.

2. Net income available to pay land taxes, profit, and occupational costs also grows less in proportion to building cost.

3. The proportion of net income to gross diminishes in the long run, though not very markedly.

This is borne out by item K of Table I, which tells us that as we increase the height the added space yields a smaller and smaller return on the additional money invested, in spite of the higher rentals obtainable on the upper floors.

TABLE II. INCOMES FROM BUILDINGS OF VARIOUS HEIGHTS
(Figures are in thousands of dollars)

Number of Stories	8	15	22	30	37	50	63	75
Building Cost (Item D, Table I)...(1)...	$ 4,891	$ 7,531	$ 9,644	$12,258	$14,451	$17,398	$20,520	$24,006
Gross Income (Item E, Table I)...(2)...	1,819	2,780	3,483	4,181	4,755	5,581	6,302	6,901
Expenses (Item F, Table I)								
Operating	311	482	592	723	814	942	1,058	1,213
Taxes (Pro-Rated)	109	168	216	275	334	391	461	539
Depreciation	95	146	186	235	276	331	388	451
Total Expenses for Building	515	796	994	1,233	1,424	1,664	1,907	2,203
Net Income.....(3)... (available to pay taxes on land, occupational costs, and profit)	1,304	1,984	2,489	2,948	3,331	3,917	4,395	4,698
Percentage of Gross Income to Cost of Building.....(2) ÷ (1).....	37.19	36.91	36.11	34.10	32.90	32.07	31.43	28.75
Percentage of Net Income to Cost of Building.....(3) ÷ (1).....	26.65	26.34	25.81	24.04	23.06	22.51	21.92	19.58
Percentage of Net Income to Gross Income.....(3) ÷ (2).....	71.69	71.36	71.46	70.51	70.06	70.19	69.58	68.08

Is it unfair to conclude from the above, that, in itself, the skyscraper has no inherent economic merit; that it is merely a necessary device to absorb the land cost; and that therefore the whole problem resolves itself to a question of land? What is the cost of the land and what has created that cost?

What part of the land cost in the case assumed by the authors is attributable to the location of the property, its nearness to the geographical center of business, its convenience to transportation, and its other natural advantages; and what part has been created by the very fact that the owner is permitted to build to a great height, which fact has been capitalized in the cost he has paid for his land? We do not pretend to sufficient knowledge to answer this knotty question. This much is true, however; some factor of the land cost is attributable to the possibility of erecting a skyscraper. The authors tell us this, when they say, ". . . any attempt to restrict building heights arbitrarily to 8 or 10 or 20 stories . . . would result in severe deflation of land values in the central business districts of our leading cities." Obviously, if a 63-story building yields the best return on a plot 200 feet by 400 feet with land at $200 per square foot, a limitation of height to (say) 40 stories would reduce the cost of the land, unless there were a prospect of an increase in return per square foot of rentable area.

It seems, therefore, as though the case assumed resolves itself as follows: the best return is on a 63-story building, because of the high land cost, and at least part of the high land cost is attributable to the possibility of a high building. Until someone solves this dilemma we have no real answer to the problem. Today no one knows the answer; certainly the authors have not even attacked it and therefore have not proven a case.

The authors defend the skyscraper against the charge of injuring adjacent property, saying: "A rise in values of adjoining plots almost always follows the erection of a new modern skyscraper in a suitable location." Inasmuch as the skyscraper, by concentrating business population, affords added business opportunities to tenants of adjacent property, there is a natural increase in land value. However, before we can assume that the skyscraper is an unmitigated blessing to its neighbors we must know whether it

unreasonably increases adjacent assessed valuation. To believe that it does not, proof must be given that taxation on the land makes allowance for the following factors:

1. The advantage had by the owner of a very large plot, over his neighbors whose land cannot be assembled in an equally large plot, because of divided ownership, existing improvements which are too valuable to destroy without an excessive charge against the initial investment in land, and a dozen or more other reasons.

2. That the owners who have assembled a large plot have not themselves paid too high a price for their land. If they have had to pay for the demolition of buildings of great commercial value, or for the good-will of an institution (such as a hotel) which will disappear, these costs should be carefully segregated in determining the assessed valuation of the land.

If it is merely assumed that the land value in the immediate neighborhood should bear a certain relation to the building cost of a large skyscraper, a heavy and damaging burden may fall on the adjacent owners, for we have seen that the building volume and cost have been increased to distribute the land cost—not necessarily its actual value, but what the owners have had to pay for it. Depending, then, on how the assessed valuation for tax purposes is determined, the skyscraper does, or does not, injure its neighbors.

Messrs. Clark and Kingston have given us a splendid picture of the economic elements of the building itself. There remains the cardinal problem of the land assessment. How are we to approach it? Is our method to be empirical and based on the best judgment that men experienced in dealing in real estate can furnish us, or can we add scientific criteria to aid us in our decisions? Is there not an approach through city planning? If we can determine a city's need for office space, make allowance for future needs and reasonable competition, take into account the factors of increased cost in a wider spread of the business area (e. g., added street cost), would we not then have a more rational basis on which to determine land costs and regulate heights of buildings?

FEDERAL REGULATION OF AIRPLANE COMMON CARRIERS[1]

By PAUL T. DAVID

A RECENT report of the Department of Commerce indicates that scheduled air-transport operators in the United States are now flying 102,194 miles daily.[2] Most of the air mail, passenger, and express services contributing to this total were inaugurated by independent operators of single airlines. During 1929 a rapid movement toward consolidation began, which still continues. The result is a much greater concentration of transport operation than is commonly realized. Air transportation is already dominated by a few large systems, as Table I shows.[3]

The largest of these is that of the United Aircraft and Transport Corporation. Its various subsidiaries operate between New York, Detroit, Chicago, and San Francisco; between Chicago, Kansas City, and Dallas; between Salt Lake City and Seattle; and between Los Angeles, San Francisco, and Seattle. Together these companies fly 23,290 miles daily, 22.8% of the total.[4]

The Aviation Corporation's system is a close second in point of mileage flown daily in the United States. Subsidiaries controlled by this corporation fly 21,775 miles daily, 21.3% of the total.[5] Collectively, they hardly constitute a system as yet, for the coordination of their activities was only recently begun. The network of airlines now controlled by the Aviation Corporation extends from Montreal, Boston, and New York to Kansas City and El Paso.

TABLE I. AIR-TRANSPORT SYSTEMS IN THE UNITED STATES, 1930

Company	Mileage Flown Daily		Per Cent. of Total
United Aircraft and Transport Corporation			
Boeing A. T.	7,724	.....	.....
National A. T.	6,852	.....	.....
Pacific A. T.	2,412	.....	.....
Stout A. S.	3,304	.....	.....
Varney A. L.	2,998	.....	.....
Total	...	23,290	22.8%
Aviation Corporation			
Colonial Airways	2,632	.....	.....
Embry Riddle Co.	1,566	.....	.....
Interstate Airlines	1,980	.....	.....
Robertson A. S.	1,198	.....	.....
Southern A. T.	7,664	.....	.....
Universal A. C.	6,735	.....	.....
Total	...	21,775	21.3%
Western Air Express Group			
West Coast A. T.	1,672	.....	.....
Western A. E.	13,928	.....	.....
Total	...	15,600	15.3%
Others flying more than 2,000 miles daily			
T. A. T.-Maddux	9,102	.....	.....
Eastern A. T.	5,478	.....	.....
S. A. F. E.	3,762	.....	.....
Thompson A. C.	3,137	.....	.....
Northwest Airways	2,875	.....	.....
Total	...	24,354	23.8%
Twenty others each flying less than 2,000 miles daily	...	17,175	16.8%
Total	...	102,194	100.0%

The third large system is that of the Western Air Express group. It flies 15,600 miles daily, 15.3% of the total,[6] principally over lines radiating from Los

[1] The writer desires to express his indebtedness to Professor J. P. Adams for much helpful advice and criticism and to the Aeronautical Chamber of Commerce for the use of its library.

[2] U. S. Department of Commerce, "United States Air Transport Routes," 2 *Air Commerce Bulletin* 131-133 (September 2, 1930). This total differs from that of the Department of Commerce because the private express airlines of the Ford Motor Company are not included in this study.

[3] *Ibid., loc. cit.* The list of subsidiaries controlled by the Aviation Corporation is taken from *Poor's Industrial Section*, 1930. The list of subsidiaries of the United Aircraft and Transport Corporation is from the same source, with the addition of National Air Transport and Varney Air Lines, in accordance with 28 *Aviation* 919-920 (May 3, 1930) and *New York Times*, July 11, 1930, p. 33:1. West Coast Air Transport is controlled by certain stockholders of the Western Air Express Corporation, according to *Poor's Industrial Section*, 1930.

[4] *Ibid.*

[5] *Ibid.*

[6] *Ibid.*

Angeles to Seattle, Salt Lake City, Kansas City, and Dallas.

These three systems together account for 59.4% of the air-transport mileage. Each of five others, Transcontinental Air Transport-Maddux the largest, fly more than 2,000 miles daily and together are responsible for 23.8% of the total mileage. The remainder, 16.8% of the mileage, is divided among 20 small independents.[7]

In so far as these systems of organized transportation engage in passenger carriage,[8] they are common carriers, in all probability. There would be no reason for doubt but for the fact that a number of them deny this status, hoping to avoid common carrier liability for accidents to passengers. No clear cut decision on this point has yet been handed down by any high court. The consensus of legal opinion, however, is that the transport companies cannot escape this common carrier status, even by express disclaimer in the ticket contract.[9]

Common carrier air transport comes to join a group of economic enterprises almost all of which have been subject to thorough governmental regulation. It is hardly strange, therefore, that it has already been subjected to some regulation and is likely to receive further attention in the future.

I. Present and Proposed Regulation

When the Air Commerce Act of 1926 was passed by Congress, there was almost no flying which could be classified as common carrier operation of aircraft, and no special provision was made for its regulation. The regulatory powers which were delegated to the Secretary of Commerce were principally concerned with the licensing of aircraft and airmen engaged in interstate commerce.

The power to grant or to withhold these licenses has been utilized to the fullest degree. The commercial operators have been subjected to increasingly drastic regulation intended to enforce safe flying and the transport operators have, of course, been included.

Recently, the Department of Commerce has promulgated a new set of regulations especially applicable to the scheduled operation of interstate passenger air-transport service.[10] Henceforth these services are required to obtain certificates of authority from the Secretary of Commerce before operation. Certification is conditioned upon compliance with a number of specific requirements. The equipment and operating personnel must meet the approval of the Secretary of Commerce. The prescribed maintenance procedure must be followed. The airway utilized must be equipped with all necessary air navigation facilities. The ground organization must be adequate.

Prior to the promulgation of these new regulations by the Secretary of Commerce, it had been suggested that air transportation should be regulated

[7] *Ibid.*

[8] Aside from passengers' baggage, they are rarely common carriers of property by air. Both air mail and air express are private carriage under contracts with the Post Office Department and the Railway Express Agency. Cf. Thomas H. Kennedy, "The Certificate of Convenience and Necessity Applied to Air Transportation," 1 *Journal of Air Law* 87-88 (January, 1930).

[9] Cf. Committee on Uniform Ticket Contract and Standard Ticket Forms of the American Air Transport Association, "Proposed Uniform Passenger Contract," 1 *Journal of Air Law* 229 (April, 1930); E. A. Harriman, "Carriage of Passengers by Air", 1 *Journal of Air Law* 35-37, 49 (January, 1930); George B. Logan, "The Nature of the Right of Flight," 1 *Air Law Review* 103-104 (January, 1930); Carl Zollman, "Aircraft as Common Carriers," 1 *Journal of Air Law* 190-198 (April, 1930); W. J. Davis, "State Regulation of Aircraft Common Carriers," 1 *Air Law Review* 47-54 (January, 1930).

[10] United States Department of Commerce, "Regulations Governing Scheduled Operation of Interstate Passenger Air Transport Services Promulgated," *Air Commerce Bulletin*, May 15, 1930, pp. 1-3.

by the Interstate Commerce Commission. Two bills were introduced in the first session of the present Congress which provided for regulation of rates and service and the issuance of certificates of public convenience and necessity by the Commission.[11]

The introduction of these bills added interest to the controversy as to the desirability of regulation. A few operators were definitely in favor of regulation as an escape from competition, but the consensus of opinion in the industry was in opposition.[12]

Opposition to regulation on the part of the industry to be regulated is not unusual. This type of federal legislation was inaugurated by the Interstate Commerce Act of 1887. At that time, and in practically every instance in which regulation has been extended to an additional agency of transportation or communication, the issue has been sharply drawn between the public interest and the desires of the agency subject to regulation. The railroads, in particular, were bitterly opposed to regulation in the first instance.

A new situation appeared with the inauguration of motor-carrier regulation. Motor bus operators have frequently been in favor of regulation. Usually it has reduced or eliminated competition between motor carriers, and the regulation of rates and services has seldom been burdensome.[13]

The air-transport operators who have advocated regulation of air transportation have had similar considerations in mind.[14] They have desired that their investments be protected by the requirement that all operators obtain certificates of public convenience and necessity. Those who are already in the field would, presumably, receive certificates as a matter of course. New entrants, desiring to establish parallel services, would have some difficulty in obtaining approval.

The opposition has come from operators who minimize the dangers of com-

[11] The Cable Bill, *H. R.*, 4826, 71st Congress, 1st Session, also introduced in the Senate by Senator Walsh as *S.*, 1864, 71st Congress, 1st Session; the Bratton Bill, *S.*, 1880, 71st Congress, 1st Session.

[12] W. J. Davis, *op. cit.*, pp. 54-60; Aero Engineering and Advisory Service, "Interstate Commerce Commission Policies May Prove a Handicap if Applied to Air Transport," *Aero Analyst*, May-June, 1929, p. 7; *Proceedings* of the First National Air Traffic Conference of the Aeronautical Chamber of Commerce, 1929, pp.44-52; John L. Cable, "Protect the Pioneers in Air Transportation," *Aeronautics*, November, 1929, pp. 15, 82, 110; Signed Letters to the Editor, *Aeronautics*, November, 1929, pp. 44-45; Edwin G. Thompson, "Aviation Does Not Need Federal Control," *Aeronautics*, December, 1929, p. 17; "Opinions are Expressed on Measure to Regulate Aeronautical Transport," 4 *U. S. Daily* 2627:2 (December 6, 1929); Hiram Bingham, "Who Should Regulate the New Air Transport Utilities?" 4 *Public Utilities Fortnightly* 716-723 (December 12, 1929); Sam G. Bratton, "Let the Interstate Commerce Commission Regulate Aeronautics," 4 *Public Utilities Fortnightly* 779-784 (December 26, 1929); Editorial, "Who Will Regulate Us," 10 *Airway Age* 1765 (November, 1929); Editorial, "Rate Regulation," 28 *Aviation* 41 (January 11, 1930); Chester W. Cuthell, "Development of Aviation Laws in the United States," 1 *Air Law Review* 89-90 (January, 1930); "Federal Control of Aviation," 1 *Air Law Review* 120-122 (January, 1930); Thomas H. Kennedy, *op. cit.*, pp. 76-90; Brice Clogett, "Air Transportation and Its Legal Problems," 28 *Aviation* 636-639 (March 29, 1930); Hiram Bingham, "Let the Airminded Rule the Air," *Nation's Business*, April, 1930, pp. 27-30, 271.

[13] "The central feature of motor-carrier control, as we have seen, is restriction of entrance to the field, not burdensome regulation of those already in it." (G. Shorey Peterson, "Motor-Carrier Regulation and Its Economic Bases," 43 *Quarterly Journal of Economics* 621 (August, 1929).)

[14] "Much as we regret any addition to the great body of governmental regulation of commerce, we are constrained to tread the path that many of the motor bus men have taken and align ourselves among those who seek further governmental control. If air transport is to develop along sound lines, with a reasonable prospect of proper returns to those who carry the major part of the burden, there must be some restraint upon competition, at least for the next few years. *We want no rate regulation, but we do want the issuance of certificates of necessity and convenience as a prerequisite before the opening of a new line.* In the imposition of that additional regulatory stipulation the potential good outweighs the unmistakable features of evil." Editorial, "Rate Regulation," 28 *Aviation* 41 (January 11, 1930). Italics ours.

petition and fear that regulation might be unduly restrictive and irksome. These also attack regulation from the standpoint of the public interest, pointing out that the early establishment of airline monopolies might slow down the rate of technical advance. The advocates of regulation make the rejoinder that cutthroat competition leads to the operation of unsafe equipment, which can least be tolerated in air transport.

The regulation of passenger transport recently inaugurated by the Department of Commerce, if diligently administered, should prevent unsafe operation because of excessive competition. It may also be expected to prevent intermittent and irresponsible competition during periods of peak loads. To this extent regulation meets the desires of the industry without subjecting it to common carrier regulation by a commission. Quite possibly, however, the new program may intensify competition along the airways where aids to air navigation have been or are being installed, since expansion of transport systems is virtually limited to these airways. The Secretary of Commerce can give no protection against the entrance of well-qualified competitors on these airways, for the Air Commerce Act of 1926 expressly prohibited the giving of any exclusive right to the use of any civil airway.[15]

II. The Economic Characteristics of Passenger Air Transport

The regulation of railroads and of the other typical regulated industries has been economically justified by their tendency toward monopoly. Competition when present has often been self-destructive and demoralizing. This appears to be inevitable in view of the peculiar conditions under which service is rendered: the strongly decreasing cost character of railroad transportation, the permanent commitment of the capital invested, and the physical limitations on the market for the service, which can be sold only at the time and place where scheduled. In what respects and to what extent does airplane passenger transportation possess similar characteristics?

Professor Myron W. Watkins has analyzed the economic characteristics of air transportation,[16] and takes the position that it is conducted under conditions of relatively constant cost, and that there can be a comparatively free flow of capital to and from the industry. He believes, therefore, that cutthroat competition should not arise, and that air transportation may well be allowed to develop under conditions of free competition.

In reaching his conclusions, Professor Watkins appears to rely principally upon two facts: most of the capital now invested in air transport by the operators is in flying equipment, and this equipment can be operated in units of small capacity. Consequently, investment should be in almost direct proportion to traffic, and the heavy capital charges which are largely responsible for decreasing cost in railroad transportation should be absent from air transportation. But are heavy capital charges on investment in roadbed or plant the only factor involved in decreasing cost?

Decreasing cost in air transportation springs from a number of sources: elimination of unutilized capacity, use of larger airplanes, increasing buying power, and increasing division of labor.

Some element of unused capacity is present in almost every cost incurred by the small airline, including costs for every kind of equipment and grade of

[15] U. S. Public Law, No. 254, 69th Cong., Section 5, b.

[16] Myron W. Watkins, "Economic Prospects of Air Transport," 4 *Public Utilities Fortnightly* 332-347 (September 19, 1929).

personnel. These wastes are progressively reduced as the scale of operation increases. Waste caused by unused passenger space is glaring up to the point of the maximum attainable utilization of the minimum of capacity which can be scheduled.[17] As the number of trips daily is increased, economy results from the larger number of daily flying hours per airplane and pilot,[18] and from the lower proportion of reserve equipment and flying personnel. When trips are scheduled at close intervals, the frequency can be adjusted to volume of traffic, and a greater proportion of the capacity scheduled can be utilized. Finally, when traffic increases to the point where several airplanes are dispatched simultaneously on each flight, only the last will fly with a partial load.

Unused capacity long persists in the case of the repair shop and the ground force of mechanics and terminal attendants, and longest of all in the case of the airport and the management.[19] Airport ownership by the transport systems is becoming common.[20] Municipal airports have fallen behind the need and, when present, have frequently been cluttered by miscellaneous activities which hamper transport operation. It is becoming apparent that transport operation must be segregated, at least at terminal airports.[21] This seems likely to strengthen the tendency toward airport ownership. Management costs are high at present for most airlines. Their present experimental nature necessitates staffs of specialists, whose services may not be completely utilized by any one organization, however large.[22]

The use of larger aircraft is frequently mentioned as a means of lowering unit cost. There is reason to believe that, in the multi-motored class, passenger-mile cost falls considerably as the passenger capacity increases from 12 to 32.[23] This

[17] Maximum utilization does not often mean 100% of capacity. Sixty per cent is commonly mentioned as the highest practicable average, the theory being that when the average load is more than 60%, second sections will be necessary to accommodate peak loads. One operator states that the best airlines are setting tariffs to cover costs (not including profit) on a 40% basis, which has seldom been exceeded. (Thomas E. Morgan, "Making Airlines Pay Their Way," 27 *Aviation* 1165-67 (December 14, 1929).) Another operator says that passenger airlines have been operating at 16% to 32% of capacity. (R. C. Marshall, "Reasons Most Airlines Don't Pay," *Aero Digest*, May, 1930, pp. 78, 238, 240, 242.

[18] Assuming 75% capacity loads in a 20-passenger airplane, Keystone engineers estimate that as the daily mileage of the airplane is increased from 250 to 750, passenger-mile cost falls from $.097 to $.045. The tables of estimates are presented and apparently none of this reduction would result from flying three airplanes 250 miles each. Management, traffic, and field maintenance costs are disregarded. (Earl Reeves, *Aviation's Place in Tomorrow's Business* (New York: B. C. Forbes Publishing Company, 1930), p. 185.) The importance of working equipment as many hours daily as possible is emphasized by Thomas E. Morgan, *op. cit.* The opportunity may be found either by increasing the number of trips daily or extending the length of line; thus, H. M. Hanshue is reported as saying that while on most operations transport airplanes are averaging 1½ hours daily in the air, on the Los Angeles-Kansas City airway airplanes are averaging five hours a day. (Earl Reeves, *op. cit.*, p. 218.)

[19] Cf. Floyd N. Shumaker, "Is Air Transportation So Different," 10 *Airway Age* 1780 (November, 1929); Editorial, "Air Line Rate Reductions," 10 *Airway Age* 1923-1924 (December, 1929).

[20] The four largest transport systems—United Aircraft and Transport, Aviation Corporation, Western Air Express, and T. A. T.-Maddux—have all made extensive investments in airports.

[21] Regional Planning Federation of the Philadelphia Tri-State District, *Regionally Planned Groundwork*, pp. 10-11 (April, 1930).

[22] Cf. the remarks of John F. O'Ryan, 1929 *Proceedings*, National Association of Railroad and Utilities Commissioners, p. 306.

[23] Cf. the curves of cost of operating 5-, 10-, and 18-passenger airplanes on a scheduled airline, 6 *Journal of Land & Public Utility Economics* 108 (February, 1930). These curves show: (1) the increased unit cost resulting from the change to the smallest size trimotor; (2) the decreased unit cost with the further change to a larger trimotor; (3) the widening differential as the curves are extended.

Cf. also, "Your company has purchased five 32-passenger airplanes . . . Preliminary tests with this type equipment indicate that, compared to airplanes now used, it will carry in passengers and cargo more than three times the load at a total increase of less than

(Footnote 23 continued on page 364)

phenomenon is primarily a special case of the elimination of unutilized capacity, the unutilized capacity being chiefly that of operating and maintenance personnel. How far the tendency toward decreasing cost continues as size of the airplane is increased is still unknown.[24] Passenger comfort and confidence may be even more important than cost in bringing the largest airplanes into use.

The buying power of the larger airlines is important in all their purchases, but especially in the purchase of equipment. The purchase price of equipment determines to a considerable extent the capital charges, maintenance costs, depreciation costs, and some of the insurance costs which, collectively, are of dominant importance. Quantity orders for equipment make a difference in price because airplane production is now carried on under conditions of rapidly decreasing cost. The large amount of hand labor now used in airplane production might be expected to give airplane production a constant cost character; but research and developmental costs are most influential.[25]

Economies which flow from the division of labor are a factor in the work of the ground force, especially in the repair shop. Greater efficiency in specialized tasks is made possible, as well as the opportunity to expand by the employment of less costly labor. The possibility of complete division of labor on the management level is another advantage of large size.

It is evident that in air transport no one element of cost dominates, as does the roadbed in railroad transportation. On the other hand, one can review the various items of cost which enter air transport without finding one which increases more rapidly than traffic,[26] or even in exact proportion, assuming a constant quality of service.

The cumulative effect is shown by a study of the cost of operating an airline between New York and Cleveland made by the firm of Black and Biglow, Consultants. An analysis of cost per passenger-mile was made for each of 12 scales of operation. The result was a clear demonstration of sharply decreasing cost to a point which has been surpassed only by the larger transport operators. Beyond that point the curve tended to flatten out, although continuing downward within the limits studied.[27]

(*Footnote 23 continued from page 363*)

one-third in costs." (*Annual Report*, 1929, Western Air Express Corporation.) Probably the "costs" which are to increase less than one-third include only direct flying and maintenance costs; the effect on the other costs would be the same if the increased capacity were obtained by increasing the number of small airplanes. In particular, the capital invested in the larger ships, and presumably depreciation also, increases almost in proportion to passenger capacity. Cf. C. T. Porter, "Factors in the Design of Commercial Airplanes," 51 *Mechanical Engineering* 913 (December, 1929).

[24] For expressions of opinion, see: "Dornier Predicts Mammoth Planes," *New York Times*, November 8, 1929, p. 46; Archibald Black, *Transport Aviation* 2nd ed., (New York: Simmons-Boardman Publishing Company, 1929), pp. 93-100, 107-113; Earl Reeves, *op. cit.*, pp. 104, 214-220; C. T. Porter, *op. cit.*, pp. 912-914; J. M. Eaton, "Selling Air Passenger Transportation, 28 *Aviation* 713-714 (April 5, 1930).

[25] "Overhead, in some aircraft plants, has run as high as 200 per cent of direct labor costs." (T. O. Freeman, "What Price Merger," 27 *Aviation* 1105-1107 (December 7, 1929).) The reasons for the high cost of airplanes are discussed by L. B. Manning, "How Aviation Looks to Us," 28 *Aviation* 1222-1225 (June 21, 1930).

[26] The cost of terminal airports may be an element of increasing cost if the industry becomes so large that the availability of suitable sites becomes a limiting factor, just as terminal expense is now an element of increasing cost for many railroads.

[27] Archibald Black, *op. cit.*, pp. 114-138; also presented as a set of cost curves, 6 *Journal of Land & Public Utility Economics* 108 (February, 1930). Several points should be borne in mind in drawing conclusions from these curves: (1) The tendency to approach constant cost appeared later in the case of the 18-passenger airplanes than in that of the 10-passenger airplanes and would probably appear later still if even larger airplanes were placed in operation; (2) No airport ownership was assumed in the case studied; (3) In comparing with present large transport systems, it should be remembered that practically all of them have

(*Footnote 27 continued on page 365*)

The probable behavior of the particular costs involved in air transport and the confirmatory evidence of this engineering study lead to the conclusion air transport is a business of rapidly decreasing cost during the early stages of growth and of slowly decreasing cost thereafter. The tendency toward decreasing cost may not continue indefinitely, yet it probably operates far beyond any scale of operation which we have yet seen. Moreover, the point of least cost is being pushed out by the ownership of airports, the use of larger aircraft, and increase in the skill of management.[28]

A limited number of large operating companies might reasonably be expected to dominate the field, in view of these conclusions. This is already the case, as noted above. Competition might conceivably remain active even among a limited number of large companies. Professor Watkins, after passing reference to the factors which cause a small air-transport line to operate at a disadvantage, goes on to say:

"But this condition is in nowise different from that encountered in any manufacturing or trading concern. It remains true only within relatively restricted limits, moreover, so that there is no reason to assume it will operate any more effectively to hinder or preclude competition than it does in the manufacturing and mercantile fields."[29]

But air transportation is a service which can only be sold at the time scheduled and at the terminus at which it is begun; and the traffic available on any one route is limited by the high cost of the service. On many routes the traffic will prove adequate to support only one airline, and that one only as a branch of a larger system. Along the heavy traffic routes there will doubtless be opportunity for more than one operator, but the number who can compete will be limited. Can we expect normal competition along these routes?

One might entertain some doubts as to the quality of the competition in such a case on the ground that, when the service sold is as homogeneous as passenger transportation over a particular route, tacit understandings as to rates are easy to reach and very likely to occur. The Sherman Anti-Trust Act is a doubtful remedial agency in such a case, in view of the difficulty of proving collusion and enforcing competition.

Furthermore, some justification in theory may be found for the belief that competition among a limited number of sellers of a homogeneous commodity does not result in a competitive level of price, even in the absence of unlawful collusion, when every seller is fully aware of the prices currently established by the other sellers.[30] In such a group the price policy of each seller is influenced directly by the price policy of every other seller. If the commodity or service sold is identical, all must sell at the same price; if one cuts his price below the level of the others, all must meet the

(*Footnote 27 continued from page 264*)

attained a passenger-mile capacity comparable to the largest size studied by extending the length of their routes rather than by multiplying trips daily. Some of the economies can be achieved by longer routes, but others are dependent upon numerous trips.

[28] Although every element of unit cost incurred by a growing airline may be expected to decrease or remain constant when considered in isolation, yet with increasing size the airline may progress through decreasing cost to the least-cost point and into a stage of increasing cost. The business may become unwieldy, the factors of production being combined and applied with less efficiency because of deficiency in management skill. Hence an increase in the skill of management delays arrival at the least-cost point. The opportunities for increasing air-transport management skill would appear to be very great in view of the present inexperience.

[29] *Op. cit.*, p. 342.

[30] E. H. Chamberlin, "Duopoly: Value Where Sellers Are Few," 44 *Quarterly Journal of Economics* 63-100, especially 85-93 (November, 1929).

cut at once. Normal competition in price is unlikely in such a situation. In normal competition a considerable lag occurs between the time when the first cut in price is made and the time when the competitors follow suit. During this interval the initial price-cutter makes a larger profit in spite of the lower price at which he sells because he is able to obtain a larger proportion of the business. But when all the sellers meet the lower price almost instantaneously, in order to retain as much of the business as they already have, it is impossible to take business away from competitors by merely cutting prices. The incentive which drives prices down to what we call a competitive level when a large number of sellers are competing is altogether lacking. It follows that price-cutting in such a situation can have only one of two objects, the bankruptcy of a weaker competitor, or the determination of the price level yielding the largest profit, commonly known as monopoly price.

This situation seems to be that which will normally obtain in the case of passenger air transportation. Assuming for the moment that rates will become stable at the monopoly level, what consequences may be expected? If the level of monopoly price yields a sufficiently high profit, new entrants may be attracted unless entrance into the market is controlled. The deterrent factors will be the capital necessary for operation on a scale insuring low costs, the likelihood of a long period of operating losses while public confidence is being established, and the possibility of a period of cutthroat competition until the relative financial strength of the new competitors has been thoroughly tested. When a stalemate has been reached, rates will again be stabilized at the level of monopoly price.

If this still gives promise of satisfactory profits to a newcomer, the process might readily continue until profits have been reduced to normal as a result of increased cost from splitting up the available business. The conclusion results that in passenger air transportation, stable price would finally be found at a level of rates yielding only a normal rate of return.[31] However, this sort of stable price would be difficult of attainment and would probably be delayed until the industry reached maturity. In any event, stable price, if attained, would be subject to the criticism that a normal rate of return was being obtained primarily by raising the level of costs rather than by lowering the level of rates.

During the youth of the industry, the frequent appearance of new competitors may be relied upon to keep rates in turmoil. This is especially probable in view of the rapidity of technical advance. Many new entrants will be attracted, not by the earnings of those previously in the field, but by the opportunity to exploit the lower cost possibilities of newly designed equipment. New airlines may also be placed in operation by aircraft factories wishing to expand the market for their product. The industry is rapidly assuming a pattern of vertical integration which may cause

[31] The changes in cost of operation with the addition of each new competitor would form a series which would be discrete, and consequently the adjustment could not be perfect. Even aside from this difficulty, stable price might be impossible of attainment. Assuming, for example, that three producers are in competition, that they share the volume in the ratio 3:2:1, that all change prices simultaneously, and that as a result the ratio is unchanged, it is extremely unlikely that all would find their maximum profit at the same price. The smallest producer would probably have an incentive to cut price to a level lower than that desired by the other two, but would be restrained by fear of a price war. Price would then be indeterminate within the range between the points where largest and smallest producers obtained maximum profits.

difficulty to the independent manufacturers of transport airplanes.[32]

In the absence of any governmental regulation tending to restrict competition, extreme competition might be expected to work itself out within a very few years. On routes of high traffic density, stable conditions might be reached with several competitors in the field, if the possession of air mail and air express contracts should not become of decisive importance. On routes of low traffic density monopoly would appear to be inevitable.

III. Desirable Regulation

Much could be said in favor of a policy of free competition and no commission regulation[33] during the next few years, if the passenger airlines could be considered in isolation from the air mail service. Competition, although violent for several years, might be socially beneficient through its tendency to foster technical advance and to weed out the incompetent operators.

On the other hand, regulation by the Interstate Commerce Commission would at the very least restrict competition to matters other than rates and prevent much wasteful destruction of capital. The analysis of the nature of competition in passenger air transport was carried to some length above to demonstrate that rate-cutting could have only two objects: the bankruptcy of a competitor or the determination of the most profitable rate. Rate-cutting to ruin competitors is hardly a socially desirable form of competition, and rate-cutting to increase profits would not be prevented by regulation.[34]

Under Commission regulation rates are unlikely to be as low for several years as they might be during periods of cutthroat competition. The public, however, has no vested right to rates for air transportation below cost of production. The danger that rates will be high enough to yield an exorbitant return to operators is remote. If the Commission merely approved rates asked by operators in the absence of complete information concerning cost of operation, and the operators were sufficiently wise to determine the exact rates productive of greatest profit, the pure profit or monopoly revenue might still be negligible.[35] The substitute-service competition of surface transportation is now forcing most airlines to operate at a loss. By the time air transport costs have reached a point where price competition with surface transportation is more than a dream and large profits become possible, the Interstate Commerce Commission can have a sufficient body of information at hand and experience enough to regulate rates effectively.

Rate regulation is of much less immediate importance, however, than the restriction of competition by limiting entrance to the field. It seems to be

[32] "I believe we may safely assume that an extensive system of consolidated mail, passenger, and express lines together with flying schools and taxi services, must provide the outlet which will allow a manufacturing concern to increase its production, and hence reduce cost." (T. O. Freeman, *op. cit.*)

[33] The bonding of the carriers to insure financial responsibility for injuries to passengers might be arranged through the control already exercised by the Department of Commerce.

[34] If a hypothetical case similar to that considered in note 31 is assumed, the Commission might not acquiesce in a rate as low as that desired by the smallest airline, but the burden of proof would decidedly be upon the airlines desiring higher rates, and the rate approved by the Commission might be lower than that which would be forced upon the smallest airline under conditions of "free" competition.

[35] Up to the present it appears to have been a rather large negative quantity for passenger transport as a whole. "The transport of passengers, considering the industry as a whole, is not producing net earnings." (Harvey L. Williams, "Outlook for Aviation," 129 *Commercial and Financial Chronicle* 3379 (November 30, 1929).)

generally assumed that the Commission would not issue a certificate of public convenience and necessity to more than one airline for the same route. A fringe of light traffic routes on which not more than one airline can operate efficiently is certain to exist, and for these such a policy is defensible and desirable. On heavy traffic routes, however, the lowest level of costs is likely to be attained by the presence of two or three competitors. The spur of competition there will more than offset the wastes resulting from dividing the traffic.[36]

The Interstate Commerce Commission has been instructed to preserve competition among railroads[37] and might reasonably be expected to permit socially advantageous competition among airlines. Even if it followed the ill-advised lead of the state commissions in the matter of motor transportation,[38]and as a matter of policy fostered monopoly under the guise of preventing duplication of facilities, much parallel competition would be made permanent by the certification of all airlines in existence at the time of instituting regulation.

The influence of the air mail on passenger transport has so far been neglected. Air mail is now much the most profitable class of traffic, but up to the present time it has been available to only one operator on a given route. The operators without mail contracts have felt this rather keenly and have sought a distribution of the mail loads among all airlines traversing the same route.[39] Such a distribution would have been possible under the terms of the Watres Air Mail Bill, as originally introduced on February 4, 1930.[40] Under the Watres Act as finally passed, [41] however, all contracts for mail carriage must be awarded by competitive bidding. This would appear to preclude more than one contractor per route, although the routes occasionally traverse the same airway for some distance.

It might appear that, if all airlines on a route had the opportunity to bid for the mail contract, the contract rate would be carried down to a point where the possession of the contract would give the holder no special advantage. This might be true if the contracts were for short terms; but contracts are let for a period of four years. After two years of operation, the contractor may apply for a route certificate, giving a right of operation for a period of eight years more. Thenceforth the rate of compensation is set by the Postmaster General, who has adopted a policy of generosity in keeping with his desire to foster aviation. The first contract routes were placed in operation in 1926, and it appears, therefore, that the present air mail contractors have an assured position until 1936 or after. The Postmaster General also has the power to extend air mail routes, and some recent additions to

[36] This is particularly true during the youth of the industry, when costs can be lowered much more rapidly by technical progress and alert management than by mere increase in volume. Even when maturity is reached, competition in service is very desirable and does not appear likely to lead to increased cost on major arteries.

[37] Act of Congress of February 4, 1887, c. 104, 24 *Statutes at Large* 379, as Amended, Section 5, (4).

[38] The state commissions have almost universally adopted a policy of monopolistic certification, even on routes where enough traffic has been available to make a limited amount of competition desirable. Commission control is then almost the only incentive to progress; its deficiencies in this respect are well set forth by G. Shorey Peterson, *op. cit.*, pp. 628-629.

[39] "If commercial aviation is going to be properly developed and to extend itself in this country, all airlines must have a balanced traffic which would at least include mail and express in addition to passengers." (E. P. Halliburton, *Proceedings* of the First National Air Traffic Conference of the Aeronautical Chamber of Commerce, 1929, p. 45.)

[40] U. S. House of Representatives, *H. R.*, 9500, February 4, 1930, 71st Congress, 2d Session.

[41] U. S. House of Representatives, *H. R.*, 11704, April 21, 1930, 71st Congress, 2d Session.

the service have taken the form of extensions of pre-existing routes, eliminating competitive bidding.[42]

The present policies of the Post Office Department appear to be much more conducive to the establishment of airline monopolies than to the maintenance of competition. [43] In many instances passenger airlines without mail contracts can hardly hope to compete with those in possession of contracts. The Post Office Department may find some way to ease the situation under existing legislation, although the solution appears to require new legislation. Congress has hesitated to permit the Postmaster General to place mail on passenger airlines other than those of the present contractors at rates set by negotiation. This hesitancy could be overcome by giving jurisdiction over the rate of compensation for air mail carriage to the Interstate Commerce Commission,[44] along with general regulatory powers over passenger air transport.

The Commission could then preserve some competition of passenger services on heavy traffic routes, to the great advantage of the public through the encouragement of technical progress in the industry. A rational scheduling of service could be brought about, with the airplanes of competitors leaving at different times rather than at the same time. Increasing the frequency of service in this way would not only benefit passengers, but would permit a more frequent dispatch of the mails and justify placing them on all passenger airlines.

Another class of transport traffic, air

[42] Strenuous efforts were made by the "pioneer" contractors to reach an agreement among themselves and with the Postmaster General by which two new transcontinental routes could be divided among them without being opened to bidding. (Unsigned, "Uncertainty Marks Change in Air Map," 28 *Aviation* 1236-1237 (June 21, 1930).) But the ruling of the Comptroller General on what would be considered an extension of an existing route made it necessary to open the new transcontinental routes to bidding. ("Comptroller General Rules on Extending Air Mail Lines," (Includes text of ruling) 5 *U. S. Daily* 1691:2 (July 29, 1930).)

According to the current news dispatches in *The Aviation News*, however, the bidding could scarcely be considered competitive. Bidding was restricted to operators having six months of night operating experience, which eliminated the passenger transport operators. It was then announced that bids might be submitted jointly, the experience of either operator being taken to meet the requirement. The Postmaster General also indicated his desire that not more than one transcontinental route should be in the hands of the same operator. The net result was that the United Aircraft and Transport Corporation refrained from bidding on the new routes, since in possession of the present transcontinental route. Robertson Aircraft Corporation (a subsidiary of the Aviation Corporation) and Southwest Air Fast Express submitted a joint bid of 100% of the maximum rates for the new southern route, the only bid received for that route. Western Air Express and T. A. T.-Maddux submitted a joint bid of 97.5% of the maximum rates for the new central route, but another much lower bid was received from an independent company of Pittsburgh which failed to meet the experience requirement of the Post Office Department. At this writing the outcome is still uncertain.

[43] "As amended, this provision for the aid of the passenger lines (referring to the Watres Act) has been so restricted that mail can be placed on but few of them. Of several lines which may be running between two points, only one can carry mail. Naturally, those lines which do not have the mail subsidy are going to be put at a disadvantage with their competitors." (Unsigned, "Uncertainty Marks Change in Air Map," 28 *Aviation* 1236-1237 (June 21, 1930).)

[44] The confusion which has followed the attempts to put the Watres Act into operation may hasten commission control of the air mail contractors. Cf. Brice Clogett, "The New Air Mail Law," 29 *Aviation* 23-24 (July 5, 1930).

In any event, setting the rate of compensation is essentially a problem in the determination of the rate yielding a fair return upon the fair value of the investment under prudent management. The Interstate Commerce Commission would appear to be much better suited to such a task than the Post Office Department. Control over the rate will probably be given the Commission eventually, regardless of the immediate future. When the Post Office Department begins to feel that the contractors are no longer entitled to special favors, and when it is faced with a deficit which must be reduced, the conflict of interest between the Department and the contractors will be sharply drawn. The obvious solution will then be control of the rate of payment by the Interstate Commerce Commission. Only in that way was the conflict over railway mail pay which raged for more than a generation finally settled. Cf. Sidney E. Miller, *Railway Transportation* (Chicago and New York: A. W. Shaw Company, 1924), pp. 386-390; Brice Clogett, "Air Transportation and Its Legal Problems," 28 *Aviation* 636-639 (March 29, 1930).

express, will probably affect the problem of regulation, but in ways which can hardly be predicted. Air express as a common carrier service[45] is at present of negligible importance, although many transport operators feel that it is a very promising field for development and that it will eventually be the most important class of traffic.[46] Most of the present air express is carried under cooperative agreements with the Railway Express Agency. The service may be developed along the present lines in cooperation with the Agency; but the transport operators are dissatisfied with the arrangements.[47] Several have established competing express services, using local parcel delivery or messenger services in order to avoid the necessity for a comprehensive ground organization. These services are recognized as a temporary expedient. The ideal arrangement from the standpoint of the operators would be a nation-wide ground organization having the same relation to the transport operators which the Railway Express Agency bears to the railroads.[48] A considerable period of experimentation, possibly with competing air express services, may be necessary to determine the usefulness of air express and the type of organization best suited to its needs. Meanwhile, it is not clear that any form of regulation would be helpful to the development of this branch of the industry.[49]

IV. The Proposed Legislation Criticized

The two bills introduced in the first session of the present Congress will presumably be used as a starting point when federal regulation is seriously considered. They may be criticized in the light of the conclusions reached above.

Neither bill is as comprehensive as might be desired: one limits the jurisdiction of the Interstate Commerce Commission to interstate air transportation, the other limits it to interstate and foreign air transportation. Any jurisdiction that Congress may have over intrastate air transportation should also be conferred in the interests of uniform regulation.

It is not suggested that federal regulation can be extended to all common carrier operation of aircraft, but the Supreme Court has laid down the controlling doctrine that the power to regulate interstate commerce is paramount, and that intrastate commerce may be regulated as an incident to the

[45] *Supra*, n. 8.

[46] U. S. Department of Commerce, "The Future of Air Express," *Air Commerce Bulletin*, January 2, 1930, pp. 7-9; Curtis Publishing Company, Division of Commercial Research, *The Aviation Industry*, 1930, pp. 89-93. A more pessimistic view is expressed by Paul Henderson, "Air Transportation," *Aeronautic Review*, January, 1930, pp. 16-17, 56-58.

[47] The high charge for pick-up and delivery service is the ostensible reason for complaint. See R. C. Marshall, *op. cit.*; Halsey Dunwoody, "Air Express Progress," 47 *Engineers and Engineering* 59-60 (March, 1930). The fact that the Railway Express Agency is primarily interested in a competing transportation medium may be more important. Cf. *Proceedings* of the First National Air Traffic Conference of the Aeronautical Chamber of Commerce, 1929, Report of the Committee on the Development of Air Express.

[48] Cf. Halsey Dunwoody, *op. cit.*

[49] The writer is aware of the deficiencies inherent in competition among express services. Competition among air express services is probably not permanently desirable. In the long run the question may resolve itself into whether the air express monopoly is to be the Railway Express Agency or a special air express agency. If the former were a certainty, immediate regulation would be desirable in order to have the rate structure for air express in the guiding hands of the Interstate Commerce Commission during the formative period.

Immediate regulation might end the attempts to take air express out of the hands of the Agency and is for that very reason undesirable. It is unlikely that the Agency will surrender the service without a struggle and equally unlikely that all the transport operators will desert it to unite in the formation of their own agency. A period of competition with certain deplorable aspects may occur, but certainly air express might better be developed into a service of some importance by a period of competitive activity than be permitted to stagnate in the hands of a monopoly whose major interests are somewhat opposed to its development.

regulation of interstate commerce.[50] Under this doctrine, all activities of the airlines carrying both intrastate and interstate passengers could certainly be regulated. It is even likely that the activities of intrastate airlines competing with interstate airlines could be regulated. This would be neither more nor less than the extent of regulatory power over the intrastate operation of railroads which is already lodged in the Interstate Commerce Commission under the Transportation Act of 1920 and which has been sustained by the Supreme Court. The scheduled airlines now in existence are almost all engaged in interstate transportation. If federal regulation were instituted in advance of regulation by the states,[51] the residue of purely intrastate operation would tend to come under federal jurisdiction.

The bills are also deficient in that no mention is made of the air mail. The Post Office Department has been able to assume a considerable range of regulatory power over the air mail contractors because of the importance to them of their mail contracts, but a quasi-judicial power of this nature ought not to be lodged in an executive department. Moreover, if it is permitted to remain there after the Commission has been given jurisdiction over the common carrier aspects of the industry, a definite conflict of jurisdiction will result. Most of the contractors, for example, could be required to maintain two different sets of uniform accounts.[52]

The regulatory legislation might well be framed as an amendment to the present Interstate Commerce Act, rather than as an attempt to include all the necessary powers in a new piece of legislation. As Commissioner McManamy has pointed out,[53] under either of the present bills the Commission would be limited by their express terms as interpreted by the courts in a new series of cases. If the legislation were framed as an amendment to the Interstate Commerce Act by which the Commission's present powers were extended to include the passenger airlines, air mail, and possibly air express, the legislation would at he same time be made simpler, more comprehensive, and more certain in meaning. The powers and policies of the Commission as worked out under the Act to RegulateCommerce and its amendments have long been subject to judicial review and the Commission is thoroughly familiar with its opportunities and limitations.

Finally, the conclusion may be warranted that, if the regulation comes in the near future, it will probably be because of the desire of the industry itself. It is to be hoped that the regulation obtained will not be governed entirely by the desires of the industry, but in any event much must be left to the discretion of the Interstate Commerce Commission.

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[50] *The Shreveport Rate Cases*, 234 U. S. 342 (1914); *Railroad Commission v. Chicago, Burlington & Quincy R. R.*, 257 U. S. 563 (1922).

[51] Only six states are now engaged in the regulation of airplane common carriers, according to the *Report* of the Special Committee on Air Transportation Regulation to the National Association of Railroad and Utilities Commissioners, 1929, p. 2. So far as can be learned, only one of these has had the privilege of issuing a certificate for a purely intrastate scheduled airline. (4 *U. S. Daily* 2239:1 (November 7, 1929).)

[52] The Post Office Department has already promulgated a system of uniform accounts for air mail contractors, covering all their operations. (Second Assistant Postmaster General, *Uniform System of Accounts for Carriers by Air*, June 30, 1929.)

[53] 4 *U. S. Daily* 2627:2 (December 6, 1929).

THE TAX SITUATION IN MORGAN COUNTY, ILLINOIS

By H. J. STRATTON

WHILE the need for tax reform in Illinois is fully apparent to public finance experts and students, to the average voter it is not clear. Exposures of the iniquities of our tax system have tended merely to add to his present passive cynicism about public affairs rather than to direct him toward a line of action. For this the students of taxation are partly to blame. They have not stated their beliefs any too widely nor intelligibly, and they have not supplied enough concrete evidence bearing upon the tax conditions of the voter's own state and county. When it comes to a question of overcoming inertia, conservatism, cynicism, and the opposition of interested political and business factions, proof cannot be too much piled upon proof. Evidence cannot be too clear cut nor too concisely and clearly presented.

Dr. Herbert D. Simpson's monograph, *The Tax Situation in Illinois*,[1] is an excellent example of careful research presented in a way that will give it a hearing outside the academic circle. This study of the tax situation in Morgan County, Illinois, is presented as additional evidence, for this county was not included in the larger study. It applies approximately the same methods to a county which is predominantly agricultural and thus broadens the picture of the tax situation in the state. In the large, the findings agree with those of Dr. Simpson and bear out his prediction of what further investigation would reveal. In detail, particularly with respect to the average level of assessment, they extend the range of variation which he found.

[1] Chicago: Institute for Research in Land Economics and Public Utilities, 1929.

This study was intended to reveal three things about the general property tax in Morgan County: (1) average level of assessment; (2) variation from that level; (3) groups favored or penalized.

The conclusions subsequently stated were reached by methods similar to, but perhaps less elaborate, than those employed by Dr. Simpson. From the deed record books for 1923 and 1924 the essential facts concerning the bona fide real estate transfers were copied—the key fact being, of course, the price at which each sale was made. When the sale price was not stated, as was true of the majority of transfers, the sale price was approximated by consulting the Federal revenue stamps which were affixed to all real estate transfers at that time. For every $500 or fraction thereof a 50-cent tax was levied. The margin of error resulting from this method of estimating sale price was not important for the large sales, and not dangerous for the medium sized ones. No revenue stamp of less than $2.50 was used. The consideration for the small sales was obtained only through explicit statement. An example of a typical case would be one with a $5 revenue stamp. The consideration was noted as $5,000, although the possible range of price was from $1 more than $4,500 to $1 less than $5,000. It may seem more logical to have split the difference and assumed the price to have been $4,750 but, since a majority of sales are made for a round sum, the $5 stamp probably more frequently than not represented a $5,000 sale. It is clear, however, that whatever error lay in this method worked in the

direction of overestimating the sale price and hence reducing the average level of assessment as determined by our figures. It is true also that taking the small transfers only when the actual price was stated, reduced their numbers below normal proportions. Since small properties were assessed at a higher level than larger properties, this was a further influence toward lowering the average level of assessment as we determined it.

If the property being transferred was mortgaged, the fact was stated in the deed record. The amount of the mortgage was added to the sale price as stated or as determined by the stamp. Local abstractors and lawyers stated that the possibility of a mortgage not being mentioned in the deed record was negligible. When any transfer showed signs of irregularity, it was discarded.

The next step was to refer to the assessors' books and obtain the assessed value of the properties under inspection. Names and descriptions of property were checked to be sure the property sold was identical with that assessed.

Even after a large number of cases were thrown out, the remaining 436 represented a large proportion of the transfers for 1923 and 1924. (There were probably less than 1500 transfers for those years, counting duplications, sales of small fractions of properties, nominal transfers, and other types of deeds which would not suit our purposes.) The cards were separated into city and rural cases, the former including principally Jacksonville, the county seat, with a few cases from the important villages. Considerably more than half of the total population of the county is in Jacksonville and the important villages. The real property of the county is largely in residential and farming use, except that used by local business houses and by the few manufacturing concerns.

The findings of this investigation as to equality of assessment were about what one would expect. Some properties were assessed at less than 20% of their sales value, others at more than 100%. Cases beyond these extremes were relatively few. Table I sets forth in detail the range and degree of variation. Only a semblance of concentration is apparent about a given assessment ratio. A range of assessed to sales value of 31 to 55% included about 70% of the farm properties. To include a similar proportion of city cases it was necessary to take a range of 31 to 70, and for the total (city and rural) one hardly less wide.

TABLE I. RANGE OF ASSESSMENT IN RELATION TO SALES VALUE, MORGAN COUNTY, ILLINOIS, 1923–1924.

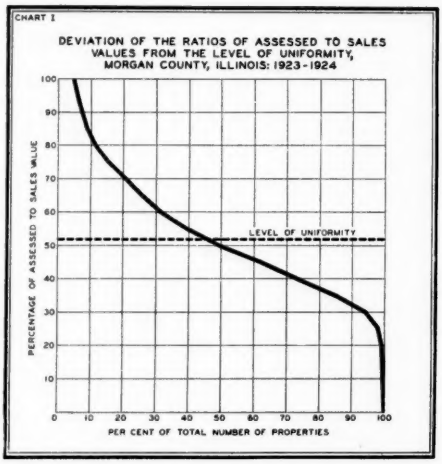
Percentage Relation of Assessed to Sales Values	Number of Properties			Percentages of Total Number of Properties		
	City	Rural	Total	City	Rural	Total
1 to 20	3	1	4	.9	.8	.9
21 to 25	2	3	5	.6	2.5	1.1
26 to 30	12	5	17	3.8	4.2	3.9
31 to 35	26	14	40	8.2	11.7	9.2
36 to 40	34	19	53	10.8	15.8	12.2
41 to 45	22	24	46	7.0	20.0	10.6
46 to 50	41	14	55	13.0	11.7	12.6
51 to 55	31	12	43	9.9	10.0	9.9
56 to 60	30	6	36	9.6	5.0	8.3
61 to 65	20	5	25	6.3	4.2	5.7
66 to 70	18	3	21	5.7	2.5	4.8
71 to 75	20	4	24	6.3	3.3	5.5
76 to 80	16	1	17	5.0	.8	3.9
81 to 85	9	2	11	2.8	1.7	2.5
86 to 90	6	1	7	1.9	.8	1.6
91 to 95	5	2	7	1.6	1.7	1.6
96 to 100	3	1	4	.9	.8	.9
101 and over	18	3	21	5.7	2.5	4.8
Total	316	120	436	100.0	100.0	100.0

The same facts may be shown in a cumulative distribution curve (Chart I). The part of the curve above the level of uniformity represents overassessment, the part beneath represents underassessment. If all the properties had been assessed equally, they would have been assessed at about 52% of their sales value, and the curve of distribution would have been a straight line following the "level of uniformity."

Variations in assessment are not entirely haphazard but tend to favor

certain property groups. As the size and value of properties become greater, the percentage relation of assessment to value is frequently found to become smaller. Table II shows the assessment level for properties in the different value groups.

For farm lands the tendency to underassess more valuable properties was not very marked, although a tendency in that direction is noticeable.



Owners of small city properties, however, did not fare at all well. Properties selling for less than $1,000 (usually vacant lots) had an average assessment of 75% of sale value, almost 20% higher than the next group of properties. The "$1,000 to $5,000" group with an average level of 56.9% was only a little higher than the "$5,000 and over" group with 54.5%. The number of large sales was so small that the value classification could not be carried farther. The fact that the regressive tendency manifested by the third group was more marked for rural than for city property was probably caused by the fact that the range in price of farm lands was greater and many more large sales were involved. The regressive tendency, however, is clearly marked in both city and rural assessments. In a community with greater variations in value and type of property the tendency would, no doubt, be much stronger.

TABLE II. VALUE OF PROPERTY IN RELATION TO ASSESSMENT LEVEL, MORGAN COUNTY, ILLINOIS, 1923–1924.

Value of Property	Sale Price		Assessed Value		Percentage Assessed to Sales Value	
	City	Rural	City	Rural	City	Rural
Under $1000	$31,290	$.....	$23,595	$.....	75.4	.....
$1000–$4999	561,817	115,870	319,935	61,745	56.9	53.3
$5000 & over	690,406	1,368,280	376,130	656,030	54.5	47.9

Most of the properties assessed at more than 100% of their sales values were vacant lots in working class additions. The assessors apparently had a feeling that any lot ought to be assessed for at least $100. Frequently $50 and $75 lots were assessed at $100. This sort of thing went a long way toward explaining the high average level of assessment for the "less than $1,000" group.

The foregoing findings affect taxation equities between persons and between property groups. A further relation to consider is that between the level of assessment in the city of Jacksonville and that of the county outside. City properties studied were 316 in number. The total sale price was $1,283,513, and the total assessment was $719,660, making 56% the average level of assessment. One hundred and twenty farm properties were sold at a total price of $1,484,150 and assessed at $717,775. The average level of assessment was, therefore, a little over 48%. It appears that, in Morgan County in 1923 and 1924, the owners of city property were being assessed at an appreciably higher rate than owners of farm property.[2]

A final point at which taxation inequity may arise is in the differences in assessment levels of the various counties of the state. Since all counties pay

property taxes to the state in proportion to their total assessment, the level of assessment is the important factor in determining how the different counties shall bear the burden of state property taxation. In other words, a man may not only pay taxes that should rightfully have been paid by his neighbor, or by members of a different income and wealth group, or by residents of a different part of the county, but he may also pay taxes that residents of a county in a distant part of the state should have paid. Inequities may (and do) permeate the whole structure of property taxation from local school district tax to state tax.

The total sale price of the 436 properties studied was $2,767,665; assessed value was $1,437,435. The assessment ratio was, therefore, 51.94%. This may be compared to the ratio of assessed to sales value in 10 other Illinois counties.[3] The highest of the 10 had a level of 50.9% on the basis of 157 cases. The lowest (Lake County) was 24.6%. The average was 34.1%. If 34.1% be taken as 100%, Lake County was underassessed and undertaxed by about 28%, and Morgan County was 52% overassessed and overtaxed.[4]

This unfair apportionment of the state tax burden may be made more vivid by reducing it to actual figures. In 1924 Morgan County paid the state tax rate of 65 cents on real property assessed at $19,863,485. This resulted in a tax on real property of $129,112. Assuming the valuation for taxation to have been 52% too high in relation to the state average and reducing it accordingly, we arrive at an assessed value of $13,068,082 and a tax of $84,942. In brief, the high assessment of real property in Morgan County cost that county $44,170 in one year—a sum which did not increase the total state revenues or enable any enlargement of governmental services but merely went to make up the deficiency in the payment of other counties which were assessed at less than the state average.

[2] The criticism might be made that the average value of the 120 country properties was greater than that of the 316 city properties, and that the regressive tendency of assessment might account for the difference in assessment level. This is not a valid criticism unless it can be shown that the rural and city samples were not typical cross-sections of their respective assessment situations. If they were fair samples, then the fact that the average farm property was larger is not significant.

As to the fairness of the samples, they were taken in the order of their occurrence in the deed record books with no attempt at selection or weighting.

It might be noted also in Table II that the "$1,000 to $5,000" class in the city had a level of assessment of 57% while the rural properties in the similar class had a level of 53%. This further substantiates the foregoing averages.

In 1927 the new assessor made a blanket 10% reduction of the farm assessments but made no reduction on city properties. If, however (See Simpson *op cit.*, p. 30, quoting E. H. Wiecking), the average value per acre of farm real estate in Illinois declined 19½% between 1923 and 1927, the discrepancy in assessment between country and city may not have been as great in 1927 as in 1923 in spite of the action of the assessor.

[3] See Simpson, *op. cit.*, p. 24.

[4] The Morgan County data were for 1923 and 1924 while the averages for the other 10 counties were for 1927. It is difficult to see, however, how this can endanger our conclusion that Morgan County is assessed considerably above the state level. Dr. Simpson (*op. cit.*, p. 24) gave data for both 1926 and 1927 for the same counties. The assessment averages were almost exactly the same for both years, showing that the rate of change was very slow. That assessment changes in Morgan County, as shown by the assessment books, were very slow also, was demonstrated by examining the entries for about 500 properties taken at random. Of these, only seven experienced a change of assessment during the four years 1923–1926.

The only way the assessment level could have changed was through sweeping changes in property values. Such changes as occurred in the price of farm lands were in the direction of a reduction, thus tending to increase the average assessment. City property values could not have changed appreciably because none of those factors was present which make for rapidly changing values, such as a marked increase in population, new industrial activities or high-pressure land subdividing and selling. It seems reasonable to conclude that the level of assessment, derived for 1923 and 1924 at the beginning of the assessment period, remained virtually the same until at least the end of the four-year period.

II. NEW YORK STATE STUDIES REGULATION

By JOHN D. SUMNER

IN the first portion of this article, appearing in the August issue of the *Journal*, major attention was given to the differing views of the majority and minority of the New York *Commission on Revision of the Public Service Commissions Law* of that state. The remainder of the discussion will consider certain other of the more outstanding points covered in the New York investigation, and indicate the public utility laws recently enacted by the legislature.

The specific proposals of the minority are focussed largely upon their plan of rate control discussed in the first part of this article. Thus minority views concerning certain points, such as security issues, some phases of intercorporate relations, control of depreciation, operating charges, contracts with affiliated companies, control of new construction, adequacy of facilities, and other points, are part of their general plan for rate control and have been discussed in that connection. The recommendations of the majority are more separable from their plan for rate control, and except where indicated, form the basis of the points discussed hereafter. While the minority proposals on most points are usually more drastic than those of the majority, there seems to be no such widespread differences between the two positions as was true in the case of standards of rate control, except the case of public competition, referred to later.[1]

Intercorporate Relations

Several recommendations deal with the jurisdiction and powers of the Public Service Commission in coping with the regulatory problems resulting from the phenomenal growth of holding companies.[2] First, it is recommended that the Public Service Commission be given the jurisdiction necessary to allow it to secure complete information concerning the identity and interests "of every owner of any substantial interest" in the voting stocks of a public utility company. Second, the investigators advise that the Commission's jurisdiction "be extended over affiliated interests having transactions, other than ownership of stock and receipt of dividends thereon, with utility companies under the jurisdiction of the commission, to the extent of access to all accounts and records of such affiliated interests relating to such transactions, including access to accounts and records of joint and general expenses, any portion of which may be applicable to such transactions; and to the extent of authority to require such reports to be submitted by such affiliated interests, as the Public Service Commission may prescribe."[3] Not only is it advised that the Commission be empowered to secure information concerning such intercorporate transactions; but that "no management contract or other contract for services with any affiliated interest, as hereinbefore defined, shall be effective unless they (*sic*) shall first have been submitted to and approved by the Public Service Commission; and that the Commission shall be

[1] For specific minority proposals see *Report*, pp. 251-253 for abridged statement. See pp. 411-422 for proposed minority amendment to the Public Service Law, and also pp. 392–400 for discussion thereof.

[2] *Report*, pp. 26–28, for majority statement of detailed recommendations; pp. 139–48 of counsel's report; and pp. 420–1 of minority report.

[3] *Ibid*, p. 26.

authorized to attach to its approval, in such cases, such conditions as may be required, in its judgment, to secure access to accounts and records and authority to require reports with respect to such affiliated interests not otherwise within its jurisdiction."[4] "Affiliated interests" are carefully defined in terms of stock ownership by individuals or corporations, and include also any person or corporation which may be found to be "exercising any substantial influence over the policies and action" of public utility companies.

The above recommendations are a significant attempt to get behind the screen of separate corporate entities to the actualities of public utility operation. They point to steps particularly necessary if there is to be a continuance of the attempt to regulate public utilities on the basis of a cost of service principle.

With respect to acquisitions of stock and transfers of property or franchises, there are several suggestions.[5] Of these one is that all purchases of 10% or more of the voting (formerly 10% of capital stock) capital stock of a utility, should be subject to the authorization of the Public Service Commission, and that such consent be made to depend upon an affirmative showing that such acquisition is in the public interest. Likewise, it is urged that telephone and telegraph companies be placed on the same basis as other utilities in respect to stock acquisition by other telephone and telegraph companies, by requiring commission authorization of such acquisitions. It is further recommended that street railway and telephone companies be placed in the same status as gas and electric corporations, by requiring the consent of the Commission before the sale of any portion of their property.[6]

It is advised that the Public Service Commission be directed to consider inconsistencies in its past decisions regarding the determination of the book values of stocks involved in the purchase of one utility by another.

Finally, the minority (p. 421) propose that the Commission encourage mergers, consolidations, and reorganizations in the public interest. In order to facilitate rate control, however, their recapitalization should be brought into harmony with the rate-base.

Security Issues

There are a number of miscellaneous recommendations concerning security authorizations.[7] These include the suggestion: (1) that the period during which securities may be issued by gas and electric companies to reimburse their treasuries for previous capital expenditures, be changed from 10 to 5 years; (2) that the provisions governing the issuance of securities by telephone and telegraph corporations be made substantially uniform with those applicable to other utilities; (3) that short-term notes issuable without the consent of the Commission should not be allowed to exceed 5% of the stated value of the securities outstanding; (4) that the issuance of stock in payment of dividends or for purposes not enumerated by statute be more clearly prohibited;

[4] *Ibid*, p. 27.

[5] *Report*, pp. 39–41, majority report; pp. 136–9, counsel's report. The minority report (p. 420) contains the drastic suggestion that the Commission's approval of contracts between operating and holding or affiliated companies "shall fix as a condition that all payments by the operating company shall be based upon the actual cost to the holding company or other affiliated corporation, . . ."

[6] Under law then existing, consent did not have to be secured except where the sale concerned the franchise of the utility.

[7] *Report*, pp. 37–39 for majority statement. The minority, as previously noted, subordinate security control to rate control.

(5) that no change in the voting rights of the stock of a public utility corporation be permitted without the Commission's approval; (6) that certain other changes be made with respect to provision for the issuance of receiver's certificates and the resale of securities, and to prohibit crediting a portion of the proceeds from the sale of non-par stock to corporate capital and a portion to surplus, or transferring any portion of a utility's stated capital to surplus.

As a group, these provisions indicate a general tightening and unifying tendency which is characteristic of many of the less drastic proposals of the investigators. The suggestions concerning changes in voting rights and the handling of surplus accounts should prove useful in protecting the interests of investors.

Accounting Control

Important changes are suggested in accounting control:[8] one recommendation would place upon the company the burden of proof in justifying any accounting entry questioned by the Commission. A second provides that annual corporate reports to the Commission disclose the identity of all holders of 1% or more of the voting stock,[9] while a third urges more frequent field audits.

It is believed that an audit should be made at least once every two years of both operating and capital accounts of all companies within the jurisdiction of the Commission. Such a policy should be of great aid in cost accounting research; in keeping valuations up-to-date under any form of stabilized rate-base; in controlling transactions between operating and holding and affiliated companies; and in making preliminary investigations of rate reasonableness. In view of the complications added to the already confused depreciation situation by the recent Baltimore Street Railways case,[10] a fourth recommendation is of particular interest. It is that the Public Service Commission "be given full authority over the method of computation and amounts of all charges to operating expense accounts and offsetting credits to reserves for any purpose whatever, including provision for depreciation or retirement." The recommendation concerning depreciation is the result, partially, of a decision of the New York Court of Appeals[11] which held that the Commission has no authority to prescribe the basis for computing depreciation, or the amounts properly set aside for such purposes.

A fifth measure would modify the accounting procedure relating to appliance sales, "in order that no part of the expense thereof shall be charged to operating expenses of the utility services." Significant, also, is the proposal that the Research Bureau (the establishment of which is recommended) be directed to conduct intensive investigations of the cost of service, rate structures, and cost accounting.

The minority go farther than the majority position outlined above. They propose what amounts to a straight-line method of charging for depreciation, and also urge that the commission have almost complete control over changes in property accounts and new construction.

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[8] *Report*, pp. 33–37; 123–131. For minority statement, see pp. 414–5.

[9] The suggested changes here are very detailed; see pp. 34–35 of the *Report*, majority statement.

[10] 280 U. S. 234 (1930), holding that the Maryland Commission was incorrect in including depreciation in operating expenses to the extent of amounts based on actual rather than replacement costs.

[11] *People ex rel. N. Y. Railways Co. v. Public Service Commission, First District*, 223 N. Y. 373 (1918).

Rate Policies

Recommendations are made[12] that the Commission work toward greater uniformity of rate schedules and structures; that by cost studies it consider the equitableness of rate differentials between customer classes; that the adoption of promotional rates be encouraged; and that adequate notice of proposed rate changes be given customers. There is an interesting discussion of rates in the counsel's report,[13] with which these views coincide.

The direction of attention toward the careful study of rate structures and differential rates is particularly important in view of the impasse reached with respect to the general standards upon which rate levels are based. Furthermore, the great development of industrial power loads in the electric utility field has raised some doubt as to the economic justification of existing differentials in rates charged different classes of customers. The original justification for low rates to industrial users, which was to fill the "valleys" in a load curve, may throw unfavorable light on present rate schedules used by companies in which the industrial load has become the peak load. Particularly is this important in view of the admittedly more competitive character of the industrial as compared with the residential business of electric companies. Certainly inadequate scientific material on the bearing of costs upon rate schedules is at present available for the use of regulatory commissions.

A similar topic considered has to do with rural electrification. It is suggested by the investigating commission[14] that a divisional head be appointed in the Public Service Commission to be responsible for investigating problems in rural electrification, and for stimulating a plan of area development.

Enlargement of Commission

In the view of many, one of the most serious obstacles to successful commission regulation has been the almost universal lack of adequate appropriations for salaries and staff. While the New York Commission is perhaps less handicapped in this respect than some others, its investigators do not consider it an exception to the general situation.

Two changes[15] are advised to alleviate this situation. The first calls for an increase of $120,000 in the annual appropriation of the Commission. Of this, it is recommended that $35,000 go toward the formation of a valuation and research division within the Commission. A separate appropriation for the proposed statewide valuation is also said to be necessary. This valuation would necessitate a temporary staff, but in addition to the latter, it is urged that a special research division be set up "for the purpose of making investigations in the 'long run problems'" of regulation, such as "valuation, cost accounting, rate structures, equitableness of rates among different classes of consumers, measurements of efficiency and the like."

In addition to the creation of a research division, which is one of the most significant recommendations of the entire *Report*, it is proposed that the general staff of the Commission be increased, and that an investigation be made of the entire salary policy of the Commission. Further, it is suggested

[12] *Report*, pp. 25–26 of majority report. Minority report, pp. 417–9, is in substantial accord with that of the majority.

[13] *Ibid.*, pp. 109-119.

[14] *Report*, pp. 49-50, and pp. 179-185 for a discussion of the problem.

[15] *Report*, pp. 31–33 of majority report; 83–98 of counsel's report; pp. 252, 319 of minority report recommend salary increases.

that the added appropriation be employed to provide one or more hearing deputies in order to relieve the commissioners of a portion of the time consumed in the task of conducting the many public hearings.

Extension of Jurisdiction

It is recommended[15a] that the jurisdiction of the Commission be enlarged to include private water companies, small telephone companies (below $10,000 value), and motor bus companies. The recommendations with respect to motor passenger carriers and private water companies are important in view of the growing magnitude of the former, and the consolidation movement in the water supply field.

Interstate Transmission

The increasing magnitude of interstate movements of electricity and the lack of state commission jurisdiction when current is sold by an out-of-state company to a company within the state, for resale to customers,[16] leads to the recommendation[17] that a special commission be appointed to study the possibilities of regulation through the compact clause of the Federal constitution, or otherwise.[18] Further, it is suggested that the same body study the general power needs of New York State, and the possibility of unifying services with other states.

Judicial Review

Especially in New York state there has been a great deal of agitation, concerning the question of appeals by utility companies to the lower federal courts rather than to the courts of the state.[19] Two main objections to review by lower federal courts are urged by the Counsel of the investigating commission.[20] The first is that an appeal by an utility company to the federal court for an interlocutory injunction inevitably leads to a complete rehearing of the entire case, together with an entire revaluation of the utility property by a special master in chancery, appointed by the court. "The United States Judicial Code makes no provision for the certification of the record of the state administrative body." Accordingly, the federal court has no record upon which to base a decision and appoints a special master to ascertain a valuation which may or may not be based upon that of the state commission. In the state court, on the other hand, the method commonly followed is that of review upon a writ of certiorari. Here the record of the state administrative commission is certified to the court and the review by the court is based upon the record before it. The Court will ordinarily question the action of the Commission only on those matters which are contested by the complainants, rather than retrying the entire case. "The second basic objection to federal judicial

[15a] Pp. 44–8 of majority report; pp. 166–79 of counsel's report.

[16] Under the rule of the Attleboro Electric Co. case, 273 U. S. 83 (1927).

[17] *Report*, p. 43 of majority and pp. 149–50 of counsel's report.

[18] See valuable discussions—"State Control of Interstate Power Transmission—The Doctrine of Congressional Permission," by Noel T. Dowling (p. 132), and "State and Federal Control of Power Transmission as Affected by the Interstate Commerce Clause," by W. C. Scott (p. 135), in 14 *Proceedings of the Academy of Political Science* (May, 1930). The interesting conclusion is there reached (p. 156), that Congress may, under the Commerce clause, enact legislation permitting the states to regulate "that part of transmission which has been held, in the absence of Congressional action, to be beyond their jurisdiction." These articles present results of a study in progress at the Columbia University School of Law.

[19] Reasons why this procedure is often adopted by utility companies are outlined by Judge M. T. Manton, of the United States Circuit Court of Appeals, Second Circuit, in "The Courts and Commission Regulation," 14 *Proceedings of the Academy of Political Science* 177 (May, 1930). See also *Report*, pp. 150-161. See also D. E. Lilienthal, "Federal Courts and State Regulation of Public Utilities," 43 *Harvard Law Review* 379 (January, 1930).

[20] *Report*, pp. 154-55.

review," according to the counsel of the investigating commission, "in its present form rests on the theory that rate making is not only a problem of the mere interpretation of established law. The law demands that the utility rate or charge be fixed only after a proper weighing of various indices of value . . . Plainly the proper resolution of these disputed theories requires understanding of matters far removed from the construction of statutes and the reconciliation of previous judicial decisions. . . . This important social problem should be preserved in the hands of the state judges. The state should not be required to surrender to the judges of the national courts so essential a key to the welfare of its people."

Whatever one may think of the wisdom of applying the "states' rights" point of view thus expressed, and curtailing federal review in some of Mr. Grundy's "backward" states, the frequent wastefulness of the duplicative valuations of special masters is obvious, where the case is originally handled by a responsible state commission. In the recent New York Telephone rate case the Public Service Commission devoted more than three years to a property valuation and collected over 25,000 pages of testimony in formal hearings. Following all this, the federal master spent more than four years additional in collecting some 36,000 pages of testimony. Such duplication of effort is difficult to justify unless we assume that state commissions are irresponsible bodies, incompetent to arrive at valid findings of fact. The practical difficulty, of course, is that if the federal judicial code were corrected in this respect, it would change the practice for all states alike. And in some states the assumption of incompetency may be warranted.

The report[21] of the majority of the investigating commission calls for two moves by the legislature to check this procedure, or attempt to do so. One suggestion is that the legislature request Congress to amend the Judicial Code in such manner as "to leave to the State Courts the determination of the local problems involved in rate cases." The second step calls for change in state law to take advantage of a provision of the United States Judicial Code,[22] which is interpreted to permit the state to authorize the state commission to bring suit to enforce its order in the appellate division of the state court, at such time as a public utility company goes to the Federal District Court for an interlocutory injunction to restrain the enforcement of the commission's order. The suit for enforcement in the state court, "if accompanied by a stay in such State Court of proceedings under such statute or order pending the determination of such suit" will operate to delay further proceedings in the federal court until the state court has had an opportunity to reach a decision.

People's Counsel

The New York Public Service Commission has been under fire for emphasizing unduly its judicial functions as contrasted with its duty as "public defender." "The Public Service Commission," argues Governor Roosevelt,[23] "was created . . . to act not as a court as between the public on one side and the utility companies on the other, but to act definitely and direct for the public, as the representative of the public and of the Legislature, their sole function being

[21] *Report*, pp. 28-31; also pp. 150-161 for discussion in counsel's report.

[22] Section 226.

[23] Franklin D. Roosevelt, "The Revision of the Public Service Commission's Law," 14 *Proceedings of Academy of Political Science* 201, 202 (May, 1930).

to supervise the utilities themselves under definite rules. . . . Gradually the Commission has come to consider itself more and more as a court. . . . "

The investigating commission recommend[24] the creation of the office of "People's Counsel" outside the Commission. The minority recommend that the appointment be made by the governor; the majority advise that it be made by the attorney general.

Municipal Competition

The minority report[25] urges the passage of statutes to accomplish the following: (1) to authorize municipalities to build competing plants without securing certificates of convenience and necessity from the state commission, and "to acquire private systems by agreement or condemnation providing the cost does not exceed the proposed cost of the municipal system;" (2) to serve surrounding territory without being required to request that privilege of the legislature; (3) to replace private with municipal plants at the end of a franchise period without being forced to purchase "the often antiquated private plants"; and (4) to form power districts in cooperation with other municipalities.

In so far as the adoption of such measures would place a useful weapon in the hands of the public by making the threat of municipal ownership more respected, the above suggestions are probably on the right track. In view of the economic factors producing naturally monopolistic tendencies in the public service industries, however, those who advocate actual competition as a means of regulation must assume a heavy burden of proof. It would seem that a distinction might well be drawn between competition of a direct character, i. e.. two or more establishments serving an identical customer area, and competition of a more indirect type, in which public ownership in nearby and similar communities is not uncommon, thus serving to keep the privately owned utility in a position where the results it achieves will be contrasted with those obtained by its public "competitors." Competition in the latter sense, particularly if accompanied by statutes designed to facilitate the transfer of plants from private to public ownership, would seem *prima facie* more desirable than competition of a direct character.

The recommendations of the minority have added interest in view of the increasing attention given public competition as a means of rate regulation.[26]

The statement of the majority[27] with respect to public competition is interesting by contrast: "This Commission has made no detailed study, either of the general problem or of these particular suggestions. In the absence of a complete inquiry—we do not believe that any extension of municipal operation in competition with private plants should be permitted, at least until further attempt has been made to secure effective regulation."

With respect to municipal ownership, as well as in other portions[28] of Part I of

[24] *Report*, pp. 31, 252.

[25] *Report*, pp. 252–3; 323–33; 419–20.

[26] See, for example, the views expressed in Keezer and May, *Public Control of Business*, (New York: Harper and Brothers, 1930).

[27] *Report*, p. 14.

[28] One may suspect the generalizations of Commissioner Walsh of being sometimes too sweeping. For example, his report cites with apparent approval evidence placed before the investigating commission which condemns the Public Service Commission (p. 309) for its handling of the case of the International Railways Co. of Buffalo and cites data to show that the "cost of management—jumped from an average of $54,800 a year for officers' salaries and expenses in the years 1916 to 1920, to an average of $185,300 a year for officers' salaries, expenses and Mitten Management in the years 1921 to 1925." This statement may be compared with

(Footnote 28 continued on page 383)

the minority report (prepared by Commissioner Walsh), sweeping statements are issued after what can have been little more than a cursory examination of municipal situations.

Other Recommendations

The various sections of the reports are packed with interesting evidence, findings and conclusions of which space does not permit discussion.

Some of the most important recommendations[29] include: (1) provisions regarding the refunding, or reparation of excess revenues collected from customers while a rate proceeding is pending in the courts under an injunction restraining enforcement of a commission's rate reduction order; (2) regulation of submetering charges; (3) grade crossing elimination (on this there is disagreement, the minority recommending a partial transfer of functions to the department of public works, the majority opposing such change); and (4) a discussion of rural electrification, not to mention other less important matters.

Finally, certain charges of negligence on the part of the Commission and virtual fraud on the part of certain public utilities are made and pressed in that part of the minority report prepared by Commissioner Walsh, and, to a lesser degree, in the counsel's report. The majority report[30] remarks that all testimony regarding these matters be "called to the attention of the appropriate State authorities for such action as may be required."

Legislative Results

A number of bills were introduced before the 1930 legislature, embodying both majority and minority recommendations.[31] The minority bills, sponsored by the democratic minority of the legislature, did not come to vote. Most of the majority measures were voted upon and passed. Many of the most important measures, however, were greatly changed as the result of assaults upon them by public utility representatives, by the conference of mayors, and by the usual operations of compromise.

The bills passed include two dealing with rate control. The first was a permissive valuation bill. Instead of ordering a statewide valuation, as the investigators recommended, this bill as passed made valuations wholly discretionary and permissive, rather than mandatory. Municipalities were to be parties to the valuation proceedings. The second bill authorized municipalities, not the Public Service Commission as originally recommended, to enter into rate contracts with companies for limited 10-year periods. Both measures were vetoed by Governor Roosevelt on the ground that the bills were trifling and utterly failed to get at the fundamentals of the problem. Likewise vetoed was the bill creating the office of People's Counsel, the governor alleging that the Public Service

(*Footnote 28 continued from page 382*)

a statement of the Public Service Commission in its decision (*Buck v. International Railway Company*, P. U. R. 1925D 782,802), where it states that the company has an adequate managerial staff without hiring additional managerial services and adds—"If the owners desire additional management—the expenses connected therewith should not be borne by the stockholders and not by the car riding public. We have, therefore, disallowed all such payments for the years under examination."

[29] *Report*, pp. 7–8, 16–50, for testing and explanation of recommendations of the majority. For a list of minority recommendations, see pp. 251–53. The minority discussion and proposed Statute include pp. 53–5, 241–422.

[30] See p. 8.

[31] For a discussion of legislative action, see John Bauer, "New York Public Utility Regulation," 20 *American Economic Review* 381 (September, 1930); and Franklin D. Roosevelt, "Revision of the Public Service Commissions Law," *op. cit.* The Public Service Law, as amended, went into effect April 25, 1930, and is chapter 48 of the *Consolidated Laws of New York*.

Commission should itself perform the function of "public defender," and that in any event it was not advisable to place that position in the attorney general's office.

Among the numerous measures passed and approved by Governor Roosevelt, the most important are those pertaining to holding companies and the bill establishing a bureau of research within the Commission. The latter has large potentialities. The holding company bills provide:[32] (1) that the Public Service and Transit Commissions have jurisdiction "to require the disclosure of the identity in respective interests of every owner of any substantial interest" in voting stocks; (2) that the commission have access to the accounts of "affiliated interests having transactions, other than ownership of stock and receipt of dividends thereon, with utility corporations and other utility companies under the jurisdiction of the commission, to the extent of access to all accounts and records of such affiliated interests relating to such transactions, including . . . joint or general expenses, any portion of which may be applicable to such transactions . . ."; (3) that "no management, construction, engineering or similar contract . . . with any affiliated interest, . . . shall be effective unless it shall first have been filed with the commission. If it be found that any such contract is not in the public interest, the commission, . . . is hereby authorized to disapprove such contract." An additional amendment requires the disclosure of the identity of the owners of 1% or more of the voting capital stock in the annual company reports to the commission.

Also passed was a bill to take advantage of Section 266 of the United States Judicial Code, and designed to make it possible to keep jurisdiction within the state courts pending the determination of issues under litigation. Doubt as to the effectiveness of such a measure is expressed in the report of the counsel of the investigating commission.[33]

Other amendments to the public service law include bills governing the question of reparations and refunds; the appointment to the commission staff of someone to study rural electrification problems; adoption of certain changes recommended in the law governing transfers of franchises or property and the acquisition of stock and security authorizations; placing the burden of proof upon the companies to justify accounting entries; and similar more detailed revisions.

Conclusion

In summary it may be suggested: (1) The report of the investigating commission, including that of counsel and of both majority and minority, constitutes a comparatively thorough study which will be of value to students of public utilities and of government control of business.

(2) The extent of agreement between the majority and minority members of the commission, on matters other than the steps desirable to make rate-making effective, is extremely significant as evidence that drastic steps need to be taken in order to rehabilitate commission regulation.

(3) The search for effective means of rate regulation as such, is by no means ended. Neither report is likely to escape widespread criticism, although, in the writer's opinion, the minority report comes nearer the mark. Its principal shortcoming lies in the treatment, or lack of treatment, of the question of in-

[32] Sections 105-111 of Ch. 48 of the *Consolidated Laws of New York*. Quotations are from these sections.

[33] *Report*, pp. 155-161.

centives under a plan which apparently proposes a straitjacketing of the rate of return. Perhaps the future will see a shift away from the present standards of rate regulation. The revival of interest in competition, this time of a public character, is a case in point, although, as suggested above, such a development must bear an extremely heavy burden of proof, particularly in so far as it involves direct competition. Investigations of the possibility of rate comparisons between companies operating under substantially similar conditions may prove fruitful, especially if used to supplement rather than to displace other methods of rate control. However, the difficulties of developing and securing acceptance of regulation along such lines would seem to be even greater than those involved in present standards of rate regulation. More promising than either of the above, in the view of the writer, is the already apparent trend toward paying greater attention to the possibilities of studying and controlling the rate of return and operating charges rather than placing almost sole emphasis upon the rate-base. The entire problem of rate control should be viewed as a "valuation" process the purpose of which is to find rate levels which are substantially adequate to secure a sufficient flow of capital, labor, and managerial "talent" into these industries. Thus far there has been too little synthesis of the various phases of the rate control process, and too much piecemeal and isolated consideration of particular phases of the process, especially problems of rate-base determination.

(4) The legislative results of the investigation are disappointing in several respects, notably in their failure to deal adequately with rate regulation itself. This failure is not surprising, however. There was inadequate time for legislative consideration of the proposals of the commission; furthermore, those proposals, as we have noted, are far from agreement and each is subject to well-founded criticism. It is a mistake, however, to conclude, as some have been prone to do, that the enacted legislation is of no significance. The changes actually wrought are of importance and should be of substantial aid to an efficient public service commission.

MUNICIPAL OWNERSHIP AND THE CHANGING TECHNOLOGY OF THE ELECTRIC INDUSTRY: TRENDS IN PRIME MOVER CAPACITY

By PAUL JEROME RAVER

THE technological revolution in the electric light and power industry, embodied principally in the centralized production of electricity marketed in distant areas by the use of high-tension transmission lines, has brought a sharp reduction in the number of self-sufficient local generating establishments, both municipally and privately owned. However, for the country as a whole, the rate of absorption of municipal plants into privately owned systems has been slowing down since 1926 and some prominent factors influencing this decline were discussed in the previous article.[1] In this connection, a numerical analysis of the trends in prime mover development in municipally owned plants was presented for the seven states of the West North Central geographic division.[2]

An analysis of the numbers of municipally owned generating plants, without reference to their size, is one means of measuring the character of the movement extensively but may be inadequate as an index of intensive[3] development. In the previous article this analysis of the numerical, or extensive, development of municipal generating plants from 1903 to 1930 was given for the West North Central geographic division by type of primary power used. It was found that the steam, gas, and oil engines and the steam turbine had each made substantial contributions to the increase in numbers of plants. This increase in numbers continued without interruption to 1920; the decline in numbers since that year has been attributable almost entirely to losses among gas and steam engine plants. The number of steam turbine plants in existence has increased steadily; oil engine plants have yielded very little to the pressure of economic and technological forces which have been limiting and reducing the numbers of municipally owned establishments in this territory. Growth in the number of composite plants (i. e., plants using more than one type of prime mover) has been continuous; analysis of prime movers used in these plants indicates very strongly that many municipal establishments have been replacing obsolete steam and gas engine equipment with more modern primary power and thus have been able to strengthen their competitive position. In the present article, the development of municipal plants in this territory is measured by using horsepower capacity as the measuring device. In a third article to follow, the relative significance of each type of prime mover in such development will be presented.

Total Growth of Horsepower Capacity of Municipal Plants

The 207 municipal generating establishments in the area of this study at the close of 1903 contained a total of only 35,106 hp. If upon this starting base we superimpose the cumulation of the horse-

[1] 6 *Journal of Land & Public Utility Economics* 241-257 (August, 1930).

[2] Kansas, Nebraska, Iowa, Missouri, Minnesota, North Dakota, South Dakota.

[3] That is, the development of horsepower capacity, within the generating stations.

power added annually, by new plants originating and by expansion of capacity in existing plants, we have a measure of the total gross increase in horsepower capacity in this territory since 1903. By deducting for each year the cumulated losses in horsepower from these cumulated gains we obtain the net annual increase in horsepower capacity, which, added to the horsepower in existence in 1903, gives the actual installed capacity in existence in each year. These cumulations are given in Table VII[4] and plotted on Chart III.

The losses in generating capacity are a result of plants changing from municipal to private ownership, of plants changing from generating all or part to purchasing all of output,[5] or of reductions in capacity of existing plants. In Chart III, the total height of each bar above the white base line indicates the total capacity at the end of each year which has been added to municipal plants since 1903; the heavily shaded portion, the reductions in capacity of existing plants; the lightly shaded portion, the total capacity which has been abandoned in the same period because of a change from generating all or part to purchasing all of output; the white portion, the total horse-

[4] Tables and charts in this article are numbered consecutively after those in the previous article.

[5] It should be noted that 1300 hp. was added to these gains in capacity as a result of changes from purchasing to generating establishments.

TABLE VII. CUMULATION OF THE ANNUAL GAINS AND LOSSES IN HORSEPOWER CAPACITY AND THE NET HORSEPOWER IN EXISTENCE AT THE END OF EACH YEAR, 1904–1929 AND AT APRIL 1ST, 1930; MUNICIPAL GENERATING PLANTS, WEST NORTH CENTRAL GEOGRAPHIC DIVISION.

Years	Cumulation of the Horsepower Added Annually			Cumulation of Horsepower Deducted Annually			Cumulation of Resulting Net		
	By New Plants (†) Originating (External Expansion) (1)	By Expansion o. Capacity in Existing Plants (Internal Expansion) (2)	Total Cumulated Gains (3)	By Plants Changing from Generating All or Part to Purchasing All of Output (4)	By Plants Changing to Private Ownership (5)	By a Reduction in Generating Capacity of Existing Plants (6)	Total Cumulated Losses (7)	Cumulated Annual Net Additions (8)	Total Horsepower Existing Each Year (9)
1903 (*)	.....	.....	.....	.....	.....	.....	.....	.....	35,106(*)
1904	3,000	3,600	6,600	.....	100	80	180	6,420	41,526
1905	4,755	6,676	11,431	150	230	315	695	10,736	45,842
1906	7,528	9,714	17,242	150	320	480	950	16,292	51,398
1907	10,318	11,944	22,262	745	358	1,244	2,347	19,915	55,021
1908	13,785	12,994	26,779	745	418	1,344	2,507	24,272	59,378
1909	15,863	16,384	32,247	1,395	418	1,524	3,337	28,910	64,016
1910	21,009	20,764	41,773	2,060	1,003	2,044	5,107	36,666	71,772
1911	24,362	26,727	51,089	2,195	1,163	2,199	5,557	45,532	80,638
1912	29,952	31,337	61,289	2,670	1,333	2,659	6,662	54,627	89,733
1913	34,424	36,603	71,027	3,401	1,926	3,519	8,846	62,181	97,287
1914	39,284	44,976	84,260	3,891	2,841	3,804	10,536	73,724	108,830
1915	45,236	57,823	103,059	5,369	3,516	4,809	13,694	89,365	124,471
1916	49,751	70,550	120,301	7,096	6,636	5,919	19,651	100,650	135,756
1917	53,481	81,272	134,753	9,454	7,368	6,859	23,681	111,072	146,178
1918	56,076	85,168	141,244	10,847	8,470	7,594	26,911	114,333	149,439
1919	60,638	111,513	172,151	12,332	9,017	8,464	29,813	142,338	177,444
1920	64,216	121,027	185,243	13,563	9,936	9,169	32,668	152,575	187,681
1921	66,458	124,997	191,455	15,459	10,816	9,194	35,469	155,986	191,092
1922	69,761	149,059	218,820	18,306	11,246	10,384	39,936	178,884	213,990
1923	72,389	162,580	234,969	21,125	13,385	11,739	46,249	188,720	223,826
1924	73,794	193,175	266,969	24,506	15,797	13,309	53,612	213,357	248,463
1925	75,488	210,710	286,198	25,252	22,269	15,100	62,621	223,577	258,683
1926	75,938	238,553	314,491	26,810	29,075	16,828	72,713	241,778	276,884
1927	76,178	281,971	358,149	28,635	33,134	17,728	79,497	278,652	313,758
1928	76,958	305,957	382,915	28,700	35,973	21,153	85,826	297,089	332,195
1929	78,458	346,454	424,912	29,305	39,674	24,628	93,607	331,305	366,411
1930									
To April 1–	79,341	365,694	445,035	29,305	39,799	24,628	93,732	351,303	386,409

(*) The data for the cumulation of losses and gains prior to 1904 are not available. The 35,106 hp. in existence at the end of 1903 is used as a base upon which succeeding accumulations of gains are added. Thus the total horsepower capacity which existed during the entire period is 445,035 (Col. 3) plus 35,106 (Col. 9) or 480,141 hp.

(†) Includes 1300 hp. added at various times by plants changing from purchasing all to generating all of output.

power which has been sold to private capital since 1903. The balance of the bar in black represents the net horsepower capacity in existence in municipal plants in each year 1903 to 1929 and at April 1st, 1930.

Perhaps this cumulated growth in horsepower is not surprising but the small proportion of this growth which has been lost to private ownership is worthy of some consideration. It will be recalled that the corresponding cumulations of *numbers* of plants in this territory originating and changing to private ownership or to purchasing[6] revealed that a total of 690 generating plants originated in this period of which 305 or 44% were lost to private ownership. Yet this heavy loss in numbers represented only 39,799 hp., or 8.3% of the total horsepower which had existed during the period.[7] Similarly, the plants changing to purchasing numbered 222 or 32% of the total number of generating plants originating. Yet the loss of capacity, as a result of this change in technical character within the establishment, was only 29,305 hp. or 6.1% of the 480,141 hp. which had accumulated by April 1st, 1930. Thus of a total of 690 generating plants originating in the period, 527 or 76% were lost as generating establishments but this loss in numbers resulted in a loss of only 14.4% of the gross accumulations of horsepower capacity. This is an indication of intensive development and emphasizes the danger of

[6] Tables IV, V, and VI of the previous article.

[7] This total horsepower which existed during the period consists of 445,035 hp. gross accumulations plus 35,106 hp. in existence at the close of 1903 or a total of 480,141 hp.

CHART III

THE CUMULATIVE GAINS AND LOSSES IN HORSEPOWER CAPACITY AND THE NET HORSEPOWER IN EXISTENCE AT END OF EACH YEAR, 1903-1929 AND AT APRIL 1, 1930, MUNICIPAL GENERATING ESTABLISHMENTS, WEST NORTH CENTRAL GEOGRAPHIC DIVISION

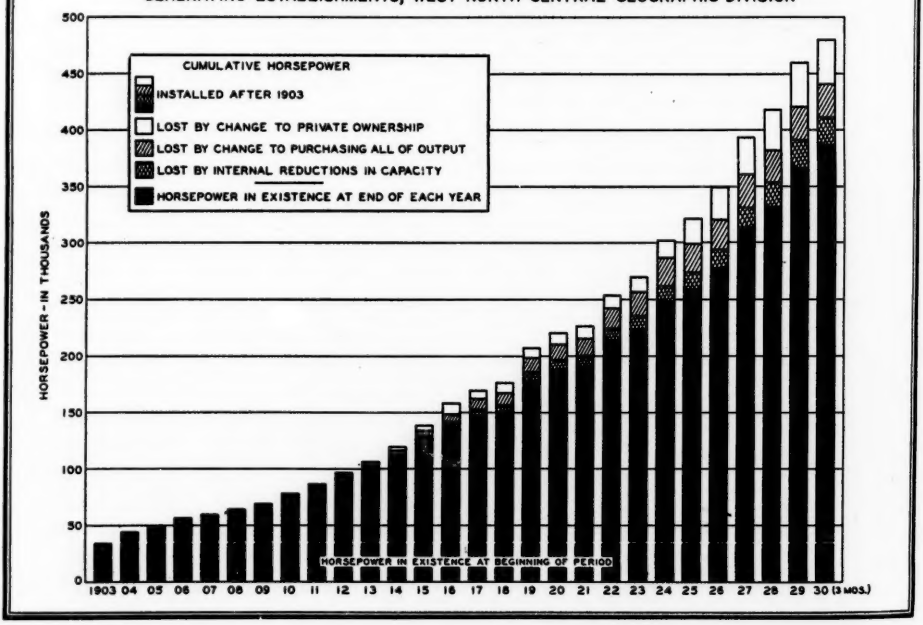
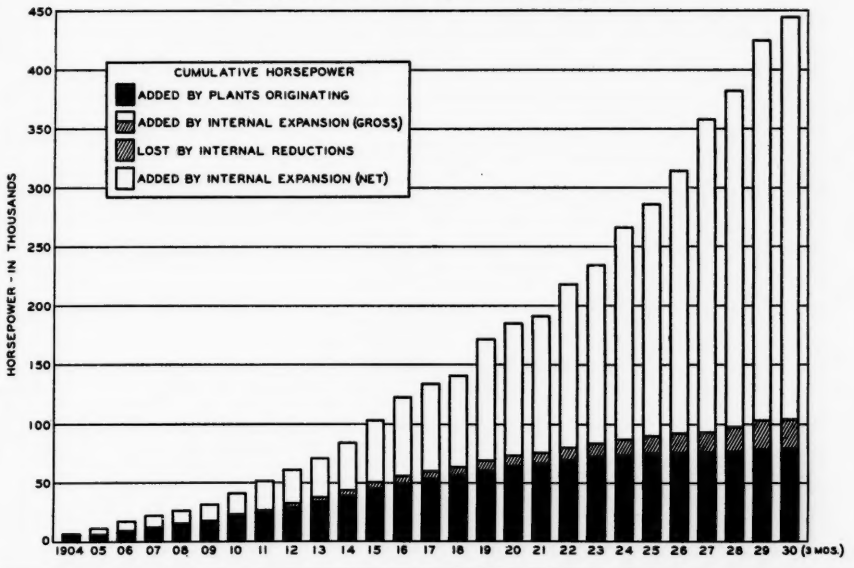


CHART IV

THE CUMULATIVE INTERNAL AND EXTERNAL EXPANSION OF HORSEPOWER CAPACITY OF MUNICIPAL GENERATING ESTABLISHMENTS IN THE WEST NORTH CENTRAL GEOGRAPHIC DIVISION: 1904 TO APRIL 1, 1930



relying only on numbers of plants for an expression of the changing extent of municipal ownership.

Annual Additions to Capacity

Primarily, the growth in horsepower of municipal plants in this territory has resulted from the expansion of capacity in existing generating plants rather than from additions to total capacity by the establishment of new plants. In the 26-year period, 1904 to April 1st, 1930, only 79,341 hp. was added by plants originating.[8] (Table VII.) Yet we find a total of 386,409 hp. installed at April 1st, 1930 (of which only 35,106 hp. was in existence at the beginning of the period), and this despite the loss of 39,799 hp. in plants changing to private ownership, 29,305 hp. in plants changing from generating to purchasing establishments, and 24,628 hp. lost by a reduction of existing plant capacity. The net result is an indicated increase of 351,303 hp. since 1903 which has been due *entirely to* a net increase of horsepower capacity in existing plants. For simplicity, this expansion hereafter will be referred to as the "net internal" expansion[9] of municipal plants and the expansion of capacity due to new plants originating will be referred to as the "external" expansion. For the 26-year period this net internal expansion was about 4½ times as great as the external expansion. The trend of this relationship is given on Chart IV.

It will be noted in Table VIII that the annual external expansion of plant capacity was about equal in amount to the net internal expansion from 1904 to 1913,

[8] See n. 4.

[9] The net expansion being the remainder after reductions have been subtracted from the additions to existing plant capacity.

inclusive. In this period a total of 39,284 hp. was added by the establishment of new plants and 41,172 hp. by net internal expansion.[10] (Table VII.) However, in only one year since 1914 has the expansion in existing plants been less than twice the amount added by plants originating; in one year (1927) it was nearly 200 times as great. The annual additions to capacity by plants originating has declined steadily since 1915, although a possible reversal in this trend is evident in 1928 and 1929.

Beginning in 1919, the annual net internal expansion in existing plants assumes increasing importance. Over 25,000 hp. was added in this year—22,872 in 1922, 29,025 in 1924, 42,518 in 1927, and 37,022 in 1929 (Table VIII). In the first three months of 1930, plants already in existence added 19,240 hp. Examining this growth by periods we find that by the end of 1915, only 53,014 hp. had

[10] This figure of 41,172 hp. and similar data for all years are obtainable from Table VII by deducting figures of Col. 6 from those of Col. 2.

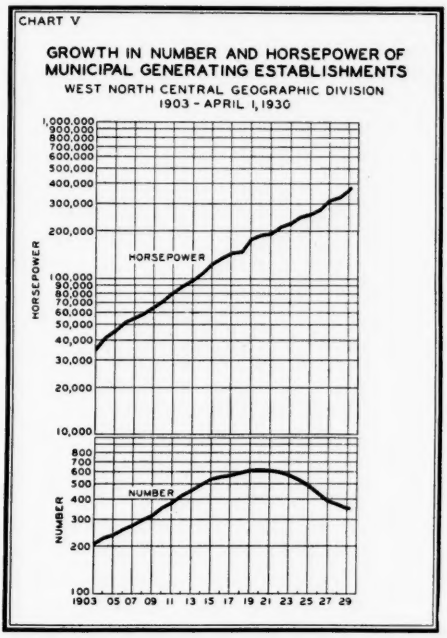
TABLE VIII. ANNUAL ADDITIONS AND DEDUCTIONS OF HORSEPOWER CAPACITY; MUNICIPAL GENERATING PLANTS, WEST NORTH CENTRAL GEOGRAPHIC DIVISION, 1903, TO APRIL 1ST, 1930.

Years	Horsepower Added Annually		Horsepower Deducted Annually	
	By Origination* (External Expansion)	By Expansion of Existing Plants† (Net Internal Expansion)	By Change from Generating All or Part to Purchasing All of Output	By Change to Private Ownership
1903	2,585	.....	.....	.....
1904	3,000	3,520	.....	100
1905	1,755	2,841	150	130
1906	2,773	2,873	.....	90
1907	2,790	1,466	595	38
1908	3,467	950	.....	60
1909	2,078	3,210	650	.....
1910	5,056	3,860	665	585
1911	3,353	5,808	135	160
1912	5,590	4,150	475	170
1913	4,472	4,406	731	593
1914	4,860	8,088	490	915
1915	5,622	11,842	1,478	675
1916	4,515	11,617	1,727	3,120
1917	3,555	9,782	2,358	732
1918	2,595	3,161	1,393	1,102
1919	4,562	25,475	1,485	547
1920	3,578	8,809	1,231	919
1921	2,242	3,945	1,896	880
1922	2,943	22,872	2,847	430
1923	2,628	12,166	2,819	2,139
1924	1,240	29,025	3,381	2,412
1925	1,694	15,744	746	6,472
1926	450	26,115	1,558	6,806
1927	240	42,518	1,825	4,059
1928	600	20,561	65	2,839
1929	1,500	37,022	605	3,701
1930 To April 1st	883	19,240	.....	125

*Also added by Changing from Purchasing to Generating — 1910 90; 1915 330; 1917 175; 1922 360; 1924 165; 1928 180

†Some plants added to existing plant capacity; othrers reduced their capacity; the net reslt (in every year an increase) is called the Net Internal Expansion.

been added by this net internal expansion, or an average addition of 4,400 hp. per year within existing plants. In the next six years (1916-1921) 62,789 hp. was added or an addition of about 10,000 hp. per year. The average for the next four years (1922-1925) was 19,950 hp. per year. Since then (1926-1929) about 33,000 hp. per year has been added to the total capacity of plants already in existence. Thus, of the horsepower added to the existing plants in the 26-year period ending in 1929, 80% was added in the second half of the period, 52% of the total was added in the last six years, and almost ⅓ in the triennium, 1927-1929. This increasing growth of horsepower capacity within existing plants in the second half of the 26-year period is in direct contrast to the losses in numbers of plants during this time.



Annual Deductions from Capacity

By Change from Generating All or Part to Purchasing All of Output. Losses in total municipal plant capacity of this territory caused by a change from generating all or part to purchasing all of output were not impressive in the first period (1903-1915). No such losses were registered in the years 1903, 1904, 1906, and 1908 (Table VIII) and the total for the entire 12-year period was only 5,369 hp. (Table VII). The influence of the spreading transmission lines is evident from 1915 until 1925 in which period a total of 19,137 hp. was abandoned or sold and electricity purchased at wholesale. This represents 65% of the total capacity changing to purchasing in the entire period. From 1925 until 1929 only 4,053 hp. was lost in this manner and for the first three months of 1930, no such losses were recorded. This decline in the horsepower capacity lost through changes from generating to purchasing in this third period is further evidence of an improved competitive position of the stations remaining in this territory and also, perhaps, of a decline in the rate at which the transmission line network has been expanded since 1926.

By Change from Public to Private Ownership. The annual losses in total municipal plant capacity by direct change from public to private ownership were not significant prior to 1916 (Table VIII). A total of only 3,516 hp. was lost in this manner in the first 12 years whereas 12,281 hp. was deducted from 1916 to 1924, inclusive (Table VII). The improved bargaining powe. of private capital due to low interest rates and ease of financing acquisitions after 1924 may be given as one reason for the relatively large losses in the third period. Over 24,000 hp. was acquired after 1924 by private owners or 62% of the total acquisition in the 26-year period. It is noticeable that when losses caused by changes from generating to purchasing began to

fall off, losses due to private acquisition began to increase, indicating that in general when the peak of expansion of transmission lines had been reached, private owners took advantage of the large supply of available capital to acquire isolated plants outright rather than to expand further their transmission lines. Concurrently prices for municipal plants rose under competitive bidding, and this fact coupled with the stock market crash in 1929 may explain, in part at least, the small loss of only 125 hp. in the first three months of 1930.

Losses by a Reduction in the Capacity of Existing Plants. It has already been pointed out that not all internal changes in municipal generating plants have been additions to capacity. There have been numerous cases where plants have been reduced in size, attributable in some instances to losses in load (usually, but not always, only temporary in character) and in others to abandonment of a part of the plant when the opportunity to purchase part of the output was presented. Unfortunately, it is impossible to determine accurately the losses from each of these causes individually.[11] Throughout the entire 26-year period the total of such reductions was 24,628 hp. (Table VII). The fact that the larger portion (85%) of such reductions occurred after 1914 is significant.[12] It is probable that transmission line development after this date, with the opportunities for purchasing part of the output, was responsible for most of these reductions in plant capacity.

Horsepower Capacity in Existence in Each Year

The resultant of the various gains and losses in municipal plant capacity thus far discussed is the net horsepower remaining in existence in each year. The figures, as given in the last column of Table VII and plotted on Chart V, show a practically constant *rate* of increase. This is a rather remarkable balancing of the forces tending to change the size and extent of municipally owned generating plants. When additions to capacity by plants originating were falling off, additions to internal capacity were more than making up this loss. Losses due to change from generating to purchasing or to change from public to private ownership supplemented each other fairly well so that total losses increased at a fairly uniform rate. The resulting net horsepower in existence in each year, when plotted on the logarithmic scale, indicates an almost uniform growth in horsepower from 1903 to 1930, although the slope of the line, or rate of increase, is slightly greater from 1903 to 1917 than it is from 1917 to 1926.

While this change in slope is small, it is nevertheless significant and indicates that even in the matter of horsepower capacity, technological factors since 1917 have probably hindered municipal ownership in this territory more than they have aided it. This is due mainly to the fact that transmission line development after 1915 decreased the rate of external gains. It is evident in 1927, however, that the rate of increase has been speeded up. If this rate should continue in the future, the slope of the line after 1927 on Chart V would again parallel the slope from 1903 to 1917 and would indicate that, in so far as horsepower capacity can be taken as a measure, other forces have again restored municipal ownership to the rate of growth which existed prior

[11] The numbers of plants purchasing a part of their output are given in note 29 of the previous article.

[12] The annual losses from this cause have not been shown in Table VIII but may be determined for each year from the annual accumulation in Col. 6 of Table VII.

to 1917.[13] Transmission line development and the economies of massed production were doubtless the principal technological factors causing a decline in the rate of growth in plant capacity from 1917 to 1926, but, as was previously indicated, these forces were directed more particularly against that growth which has been called external in character—starting new plants and eliminating existing generating stations. They doubtless had some effect on internal expansion as well, as is indicated by the number of plants which changed from generating all to generating part of their output (See table in footnote 29 of previous article). In addition, of course, we must recognize that a reduction in the number of plants originating and in the number in existence indirectly affected the amount of internal expansion by reducing the number of possibilities for such expansion.

The fact, then, that the slope of the line of annual existing plant capacity in Chart V does not follow the slope of the line of numbers of plants in existence after 1917 seems attributable (in part at least) to other technological factors than transmission line development and massed production. Technological factors affecting the efficiency of generation in isolated stations may be looked to for at least part of the explanation of this growth in internal capacity—a growth which is the more remarkable because of the decline in numbers of such stations. Before turning to an analysis of prime movers used in these plants for such an explanation, it is desirable to examine more carefully into the size of plant in which this total expansion and more particularly the internal expansion, took place.[14]

Comparison of Growth in Numbers with Growth in Horsepower. It is of interest to note on Chart V that the rate of increase in numbers of plants in existence is almost equal to the rate of increase in horsepower capacity installed in those plants from 1903 to 1917. For this geographic division, then, growth in numbers of plants was a fairly accurate index of the growth of publicly owned generating stations prior to 1917. The contrast in the rate of growth between numbers of plants and horsepower capacity after 1917 raises doubts as to the sufficiency of a number index in describing the municipal ownership movement after this date. Since the spread between the curves of horsepower capacity and plants in existence has been brought about very largely by internal expansion—that is by increases in the installed capacity of existing plants—some explanation of the circumstances under which this growth in internal capacity has taken place is desirable.

Influence of a Few Large Plants on Internal Expansion

Before we can accept this internal expansion in horsepower as being typical of the growth of municipal generating stations of this territory, it is necessary to examine the influence of the larger stations. A few large and well situated municipal plants might account for most of this internal expansion in horsepower capacity.

About 77% of the total "net internal" expansion has occurred since 1919. There were 715 plants in existence at some time during the period 1919-1924. Of these, 469 experienced no expansion and 246 (34.4%) added to their existing plant ca-

[13] Attention must be called to the limitations of total horsepower as a measure of the municipal ownership movement on account of the influence of internal expansion of a few large plants.

[14] The analysis by type of primary power installed is reserved for the third article of this series.

pacity (Table IX). These figures, however, do not give a true picture of the breadth of the expansion movement in this six-year period; for of the 469 plants in which no expansion took place, 65 changed to private ownership during the period and 106 changed from generating all or part to purchasing all of output. These changes reduced the possibilities of expansion since these plants did not remain as self-sufficient municipal establishments throughout the six-year period. Thus, while not entirely accurate, it is more nearly correct to say that 45.2% of the possible cases for internal expansion contributed to such expansion during this period. By itself, this statement would indicate a broad movement toward increasing size of municipal plants; but it still does not adequately describe the extent of the movement.

Of the 246 cases of internal expansion, 99 plants (40%) added 100 hp. or less during the period to account for 5,214 hp. or only 4.8% of the total "net internal" expansion; 106 plants (43%) added 27,560 hp. in amounts of 101 to 500 hp., accounting for 25% of the total net internal expansion. In the next three groups, 40 (16.2%) of the 246 plants expanding their capacity, contributed 47% (51,657 hp.) of the internal expansion. One plant (Kansas City) contributed 23% (25,237 hp.) of which 13,267 hp. was added in 1919 and 11,970 hp. in 1924. Thus, of the total plants expanding their capacity in this period, 41, or 16.6%, accounted for 76,894 hp. which is in turn 70% of the total "net internal" expansion (109,668 hp.) for the 6-year period.

In the period from 1925 to April 1st, 1930, there were, at some time or other, 508 generating establishments in existence. Of these, 253 experienced no expansion; but of these same 253 plants, 137 changed to private ownership and 39 changed to purchasing all of their output. Few, if any, of those changing to private or to purchasing establishments expanded their plant capacity during the period so that again we may say that the 255 cases of actual expansion represent about 77% of the possible cases of expansion in these 5¼ years. From these figures alone, one would conclude that the movement toward increasing the size of municipally owned generating plants is broad in character and has become even more extensive during the later period than it was immediately after the War.

TABLE IX. NUMBER OF MUNICIPAL GENERATING PLANTS EXPANDING THEIR CAPACITY, DISTRIBUTED ACCORDING TO THE AMOUNT OF EXPANSION AND CAPACITY OF PLANTS BEFORE EXPANSION; BY PERIODS, 1919–1924 AND 1925–1930, WEST NORTH CENTRAL GEOGRAPHIC DIVISION.

1. *Period 1919–1924.*

Amount of Expansion in 6 Year-Period—Hp.	Total Number Plants Expanding	Horsepower Capacity of Plants at Beginning of Period			
		0–200	201–500	501–1000	Over 1000
0– 100....	99	86	12	1	0
101– 500....	106	45	50	10	1
501– 1000....	20	1	10	9	0
1001– 2000....	11	0	4	3	4
2001– 5000....	9	1	0	4	4
5001–10,000....	0	0	0	0	0
25,000–30,000....	1	0	0	0	1
Total.....	246	133	76	27	10

2. *Period 1925–1930*

0– 100....	54	39	9	6	0
101– 500....	115	46	54	12	3
501– 1000....	50	3	15	25	7
1001– 2000....	17	0	0	5	7
2001– 5000....	12	0	0	1	11
5001–10,000....	7	0	0	1	6
25,000–30,000....	0	0	0	0	0
Total.....	255	88	83	50	34

However, if we examine the 255 cases of expansion during the period since 1924 (Table IX) we find 54 plants (21%) contributing 100 hp. or less for a total of 2,704 hp. or only 1.6% of the total internal expansion. This is only half the contribution made by this class in the previous period because of the decrease in the number of these small plants remaining in existence. One hundred fifteen plants of a size in which an expansion of

101 to 500 hp. took place accounted for 32,660 hp., or 45% of the number of plants added 19.6% of the expansion during the period. Of the balance, 86 or 33.7% of the number of plants expanding added a total of 131,337 hp. or 78.8% of the total added by all plants during the period.

It is evident that relatively few plants contributed the larger portion of the total internal expansion. Yet the expansion of some of the smaller plants has been marked. For example, one plant under 200 hp. in size added over 500 hp. to its capacity in six years, 1919-1924, and four plants over 200 hp. but under 500 hp. in capacity added over 1,000 hp. to existing capacity in the same period. In addition, four plants in the 501-1,000 hp. size-group added over 2,000 hp. and one plant (Marshalltown, Iowa) increased from 100 hp. in 1918 to 3,200 hp. in 1924. Similarly in the 1925-1930 period, 15 plants in the 201-500 hp. size-group added over 500 hp. to existing capacity, five plants in the 501-1,000 hp. group added over 1,000 hp., and one plant in this group added over 5,000 hp. to existing capacity in the 5¼ years.

While it is not possible within the limits of this paper to make a more critical analysis of this movement toward increased size, the figures presented give a picture sufficiently accurate for our purposes. It is thus evident that the municipal ownership movement at least after 1919 has been characterized by the strengthening of a fairly large number of the existing plants by increased generating capacity. The movement toward larger plants was just as strong from 1919 to 1924 as it was from 1924 to 1930, but in the latter period this movement has been more pronounced in plants with more than 500 hp. capacity before expansion. This analysis characterizes internal expansion by size of plant expanding. We need a similar characterization of the total expansion—internal and external.

Analysis of Plants in Existence by Horsepower Groups

A frequency distribution of the number of plants by horsepower groups and by years will reflect, in a broad way, the movement toward larger plants brought about by external as well as internal expansion and will indicate the typical size of plant in various years of the 26-year period. This frequency distribution is given in Table X and plotted on a logarithmic scale in Chart VI.

The general impression received from a survey of Table X is that the typical size-group for generating plants in this territory has been 101-200 hp. from 1903 to about 1909 with almost equal numbers of plants in the lower and all the higher groups. The relatively large number of newly established small plants from 1910 to about 1920 moves the typical group below 100 hp. during this period, developing a skewness in the distribution. At the same time the larger horsepower groups to the right of the modal groups have shown considerable growth and expansion during the period. After 1920 this skewness in the development becomes more and more pronounced and while the group of plants under 100 hp. in size remains the largest group in point of numbers until 1926 it no longer typifies the size of plant, because of the pronounced movement into the larger size-groups. After 1926 it is impossible to determine a single modal group. It is evident, however, that the plants in the smaller size groups have been rapidly eliminated and that plants in the larger groups have been growing in numbers. This table gives a broad characterization of the changing size of municipal plants during the 26-year period. It is note-

worthy that in the three-months' period to April 1st, 1930, four plants were added to the 501-1,000 hp. group, two plants entered the 1,001-2,000 hp. group, and four plants increased their size to over 2,000 hp.

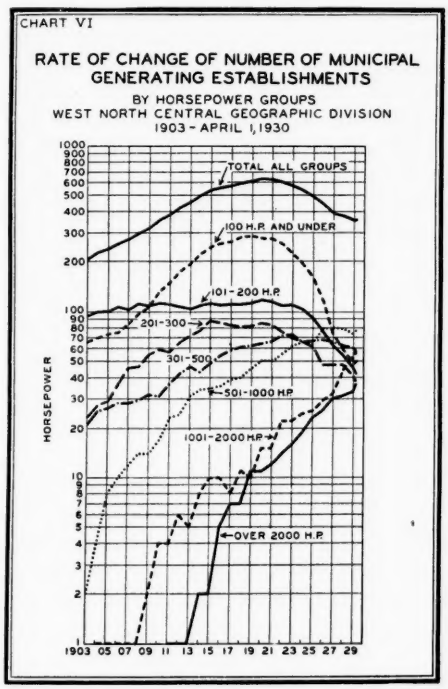
Reference to Chart VI discloses the rate of increase or decline of each group of plants throughout the period. The rapid rise of plants in the group below 100 hp. is accounted for largely by originations of small plants prior to 1918. After this year the drop in numbers of plants in existence has come largely from the rapid decline in this group. The second group, 101-200 hp., maintained its numerical significance until 1924 after which the loss was fairly rapid. The third group, 201-300 hp., reached a peak in 1915 but has declined steadily but not rapidly since that time. Analysis of this group leads to the conclusion that much of the falling off here has been a result of expansion of existing capacity thus contributing to a rise in numbers of plants in the larger groups. The fourth group, 301–500 hp., reached a peak of 73 plants in 1923 and had dropped to 57 at April 1st, 1930. The fifth group, 501–1,000 hp., reached a peak of 80 plants in 1927, dropped to 74 in 1929, and recovered to 78 in the first three months of 1930. The sixth group, 1,001–2,000 hp., has never shown a decline in numbers and is characterized by the remarkable rise from 29 plants in 1926 to 56 at April 1st, 1930. The last group is also interesting because of its sustained rise in numbers of plants since 1913 with a 50% increase after 1926.

TABLE X. FREQUENCY DISTRIBUTION OF THE TOTAL NUMBER OF MUNICIPAL GENERATING PLANTS IN EXISTENCE, BY HORSEPOWER GROUPS AND BY YEARS, 1903–1930, WEST NORTH CENTRAL GEOGRAPHIC DIVISION.

Years	All Groups	100 Hp. and Under	101–200 Hp.	201–300 Hp.	301–500 Hp.	501–1000 Hp.	1001–2000 Hp.	Over 2000 Hp.
1903	207	67	94	23	21	2	.....	.....
1904	227	70	100	27	25	4	1	.....
1905	238	73	101	29	26	8	1	.....
1906	257	75	106	37	28	10	1	.....
1907	273	84	103	45	28	12	1	.....
1908	299	97	112	46	29	14	1	.....
1909	317	106	108	55	32	14	2	.....
1910	357	133	113	59	31	17	4	.....
1911	383	150	111	57	37	23	4	1
1912	420	175	107	65	42	24	6	1
1913	451	192	104	72	46	31	5	1
1914	494	222	109	77	43	34	7	2
1915	539	243	113	88	48	35	10	2
1916	557	257	109	86	54	36	10	5
1917	568	262	111	83	58	39	8	7
1918	591	282	111	81	61	40	11	7
1919	609	286	113	82	62	45	10	11
1920	619	277	117	85	64	50	15	11
1921	615	274	115	83	66	50	15	12
1922	602	255	108	76	72	55	22	14
1923	573	221	109	70	73	62	22	16
1924	538	193	103	67	66	66	24	19
1925	493	160	91	62	67	65	25	23
1926	439	115	76	47	68	79	29	25
1927	391	74	62	47	66	80	32	30
1928	376	59	54	47	62	79	44	31
1929	355	48	45	41	60	74	54	33
1930 To April 1st	357	49	42	38	57	78	56	37

Effect of Internal Expansion Upon Rate of Absorption into Private Systems

While, in certain years, it is evident that a fairly large proportion of the internal expansion in horsepower capacity has been due to the influence of a few large plants, it is nevertheless evident that the movement toward larger plants



has been fairly broad in extent. Average size was only 170 hp. in 1903, and 231 hp. by the end of 1915. In the second half of the 26-year period, however, average size had increased to 525 hp. in 1925, and by April 1st, 1930, was 1,082 hp.—a 100% increase in less than five years.

The importance of this internal expansion in the second half of the period, and more particularly in the last four years, provides one clue to the slowing up in the rate of acquisition of municipal plants by private companies since 1926.[15] In so far as increasing the size of plant is an element in reducing costs of generation (and it is an important element in small plants), municipal plants in this territory which were able to withstand the economic and technological forces tending to eliminate them as public undertakings, have been able to improve their competitive positions.[16] In the meantime, private capital, by massing production, has already lowered its generating costs to a point where further reductions are increasingly difficult. The differential between costs of generation in these larger isolated plants and central station systems has thus been narrowed.

Furthermore, as already pointed out, the increasing size of municipal plants is being affected by the introduction of new and more economical types of prime movers, a factor tending to reduce still further this differential in costs of generation between public and private plants.

To these two factors—increasing size of municipal plants, and more efficient generating equipment—we may add a third, discussed in the previous article. As private systems have pushed their transmission lines farther and farther from the central market, they have experienced in many cases a decline in gross revenues per dollar of investment. As a result, the possibility of lowering the price of electricity to meet the competition of an isolated plant has been lessened; probably, not in proportion to the increased investment, but nevertheless, reduced.

[15] The numerical data for this rate of absorption for the entire country were given in the previous article.

[16] It is recognized that in some cases municipal plants, especially in this territory, have been and still are too far removed from a privately owned power supply to be affected by competition from massed production.

These three factors are by no means the only ones to be considered, but assuming that other factors (such as managerial efficiency and political interference[17]) remain constant, these three are making it possible for many municipalities, unfavorably located with respect to the power market and transmission line network to operate an electric establishment at costs competing with those which can be secured under the circumstances by central station systems. Here are technological influences which seem to be aiding municipal ownership.

These influences give an added significance to the internal expansion taking place in municipal plants. They account, in part at least, for the improved competitive positions of these plants and to that extent for the declining rate of their absorption into privately owned systems since 1926. They also give added significance to the recent trends in prime mover development discussed in the previous article. In the third article an analysis of the horsepower capacity by type of primary power will complete the present survey of technological influences affecting the development of municipal plants in this territory.

[17] It is also recognized that the rate of expansion of transmission lines may have slowed up in this tl l period.

II. THE TREND OF MULTI-FAMILY HOUSING IN CITIES IN THE UNITED STATES.

By COLEMAN WOODBURY

CERTAIN expressions of popular speech, e. g., "mill town," "industrial suburb," "mining town," "recreational center," etc., imply easily recognized differences in the physical aspects of cities. To be sure, the reference in many cases is to the type of industrial or economic activity by which the town's population in the main earns its livelihood. Almost always, however, the character of the residential districts is quite as much, if not more of a factor than the industrial and commercial areas in the forming of these municipal types. Similarly, one who lives in a metropolitan community casually accepts the fact that certain residential areas house quite clearly defined economic classes and that these residential areas are easily distinguishable by their age, condition of repair, density of population, size of lot, and type of houses. One of the first questions to be formulated, therefore, when the apartment house increase is studied with any degree of thoroughness is: How have apartments fared among the different economic classes of cities? Have the industrial wage-earners in large numbers given up the cottage for the tenement? Have the commercial employees joined the apartment house movement to a greater or less extent than the industrial employees?

The answers to these and similar questions require data on occupational groups and economic classes. Unfortunately the available data are not sufficiently detailed, and the municipality as a unit is much too large to allow the most effective classification on the points raised by these questions. The Federal Census of 1920,[1] however, contains data which throw some light on the possible connection of occupational groups with the trend of multi-family housing. Under the nine major headings—agriculture, forestry and husbandry, extraction of minerals, manufacturing and mechanical industries, transportation, trade, public service, professional service, domestic and personal service, and clerical operations—572 occupations and occupation groups are listed. The difficulties in trying to make such classifications are obvious, and before the results can be used as the basis of classification and comparison in any study the method used by the Bureau of the Census must be clearly in mind. For this reason the following quotation[2] from the Census explanation of this material is in point:

". . . The general plan of combination was to group together all the workers in each separate occupation without regard to the different industries in which the occupation is pursued. In so condensed a classification, however, it is impossible to show separately each different occupation. In many cases, therefore, different occupations were combined; but the aim was to combine only those occupations which are very similar. Those occupations which are not sufficiently similar to others to be combined with them and which are not sufficiently important to be classified separately, and those occupations which mean little apart from the industries in which they are pursued were combined under a number of residuary occupation groups, such as semiskilled operatives in candy factories, semiskilled operatives in cotton mills, etc. These residuary groups,

[1] *Fourteenth Census of the United States*, Volume IV—Population—Occupations.

[2] *Ibid.*, pp. 11-12.

while not strictly occupational, have a great deal of occupational significance; for although each of them is made up of the workers in numerous occupations, pursued, sometimes, in several different industries, these workers together form a group which, in many respects, is occupationally homogeneous. Since the proprietors, the officials, the supervisory persons, the clerical workers, the followers of trades, and the laborers are otherwise classified, all the persons included in each of the residuary groups shown under 'Manufacturing and mechanical industries,' are factory operatives mainly belonging to the semiskilled class. In each extractive industry the nature of the returns was such that it was deemed best to combine the laborers and the semiskilled workers.

Thus, so far as practicable, the combination of elementary occupations was along *occupational* rather than *industrial* lines.

In the Fourteenth Census classification, as in the Thirteenth, the occupations and occupation groups, excepting clerical occupations, are grouped under the eight general divisions into which, for purposes of occupation classification, the industrial field is divided, each occupation being classified in that part of the industrial field in which it is most commonly pursued. For example, blacksmiths, carpenters, electricians and machinists are classified under 'Manufacturing and mechanical industries,' though each of these trades is pursued in almost every industry. Clerical occupations, which can hardly be said to be more common to one general division of occupation than to another, have been classified apart."

The occupations grouped under the first five major headings—agriculture, forestry and animal husbandry, extraction of minerals, manufacturing and mechanical industries, transportation, and trade— accounted for 77.3% of the total number of persons gainfully employed in the United States in 1920. In most of the cities this percentage is slightly smaller due to the numbers of persons in clerical jobs and domestic service but a fairly representative figure for the cities would be approximately from ⅔ to ¾ of the total gainfully employed. The relative size of these groups and the fundamental character of the economic activities included in them suggest that they may be used as the basis of classification of cities by economic types. Further, these five sections of the Census classification fall quite naturally into two groups: (1) Agriculture, forestry and animal husbandry, extraction of minerals, manufacturing and mechanical industries, making up what is usually called "industry"; (2) transportation and trade, commonly referred to as "commerce." In the technical language of some economists the industrial occupations are concerned chiefly with giving "form" utility to goods; the commercial occupations supply "time" and "place" utilities.

Using the Census figures for these two major groups of economic activities as indicators of the economic character of the cities in the study, Table VI[3] was prepared. The ratio of the aggregate numbers of industrially and commercially employed to the total gainfully employed in 1920 was computed for each of the major size-groups of cities in this study. The multi-family residence construction record was worked out for cities above and below this average ratio for both industrially and commercially employed. For the sake of brevity in the discussion, cities above the average ratios of industrially employed and below the average ratio of commercially employed in their respective size-groups are termed industrial cities, those above the average ratio of commercially employed and below the average industrially employed are referred to as commercial cities. In almost all cases a city which is above the average for industrially employed is below the average in

[3] Tables and charts are numbered consecutively with those appearing in the first section of this study, 6 *Journal of Land & Public Utility Economics* 225-234 (August, 1930).

TABLE VI. INCREASE IN PERCENTAGE OF TOTAL FAMILIES PROVIDED FOR BY MULTI-FAMILY DWELLING CONSTRUCTION IN CITIES CLASSIFIED BY SIZE AND BY OCCUPATIONS OF POPULATION, 1921–1928.

Classes of Cities by Population and Occupational Groups (1920)	Number of Cities	Percentage of Families Provided for by New Multi-Family Dwellings		Increase of Multi-Family Percentage 1921–1928
		1921	1928	
1. *Cities over 1,000,000*				
Above average industrially employed (40.3%)	1	6.73%	23.40%	16.67
Below average industrially employed	2	44.29	80.48	36.19
Above average commercially employed (24.6%)	2	44.29	80.48	36.19
Below average commercially employed	1	6.73	23.40	16.67
2. *Cities 500,000–1,000,000*				
Above average industrially employed (44.0%)	3	25.21	30.48	5.27
Below average industrially employed	6	21.34	54.60	33.26
Above average commercially employed (23.2%)	7	19.72	53.24	33.52
Below average commercially employed	2	36.66	29.99	−6.67
3. *Cities 250,000–500,000*				
Above average industrially employed (39.6%)	8	16.60	53.61	37.01
Below average industrially employed	5	18.86	43.17	24.31
Above average commercially employed (24.4%)	8	17.15	40.71	23.56
Below average commercially employed	5	18.91	60.58	41.67
4. *Cities 100,000–250,000*				
Above average industrially employed (46.2%)	21	11.52	36.42	24.90
Below average industrially employed	21	13.23	32.15	18.92
Above average commercially employed (23.5%)	21	11.75	28.40	16.65
Below average commercially employed	21	15.71	42.87	25.16
5. *Cities 50,000–100,000*				
Above average industrially employed (48.5%)	33	12.34	22.83	10.49
Below average industrially employed	39	18.17	28.55	10.38
Above average commercially employed (22.2%)	40	17.85	25.86	8.01
Below average commercially employed	32	13.34	27.67	14.33
6. *Cities 25,000–50,000*				
Above average industrially employed (48.8%)	63	10.78	25.23	14.45
Below average industrially employed	53	11.34	37.37	26.03
Above average commercially employed (22.0%)	60	11.22	37.31	26.09
Below average commercially employed	56	10.95	25.36	14.41

commercially employed and vise versa. For some cities, however, this is not true. Washington, D. C., for example, is below average in both industry and commerce and some small cities, composed almost entirely of lower income classes, are above the average in both groups. These cases, however, are not frequent enough to invalidate the classifications made; but, in order to avoid a possible misunderstanding of the data, all four classes are given for each population size-group.

Before trying to draw conclusions from the data of Table VI the assumptions and limitations in the method should be clearly formulated. First, the assumption is made that the economic character of the population he cities did not change markedly from 1920 to 1928. Further, this method does not justify one in saying that single-family houses are being built for commercial employees and multi-family structures for industrial workers or vice versa. Undoubtedly, in many cities considerable portions of both of these classes do not constitute a direct market for new construction but live in districts originally built for other classes. The accurate description of these data can go no further than a statement that cities of a certain size which are chiefly fabricating or distributing centers, as the case may be, have had such and such a record in recent housing construction. Further inferences as to the effect of wage levels, social classes, nationality, etc., on the housing experience of the cities, which might be made from this classification, involve other and probably less tenable assumptions which cannot be discussed here.

Although the two groups of cities with the largest populations are too small in number to afford a basis for generalization, the same conditions exist in both groups: namely, the apartment increase has been stronger in commercial than in industrial cities. In the next two groups, however, the opposite is quite clearly true. The cities with large industrial and small commercial populations have experienced an appreciably greater increase in apartment construction than the other cities of the same size. An interesting fact in this connection is that the cities in the fourth size-group (100,000 to 250,000) had a very moderate apartment house increase whereas the third group (250,000 to 500,000) recorded the second largest gain in multi-family construction over the period in question (See Table IV in previous installment of this article). The cities from 50,000 to 100,000 population, although their percentages of industrially employed varied from 23.9 to 75.3, showed slight differences in apartment increase when grouped by occupational characteristics. The group of smallest cities show the same tendency, although not in the same degree, as the two largest population groups. The commercial cities show a noticeably larger shift toward multi-family units in new construction than do the industrial towns.

In summary, the only safe statement is that no clear connection between major occupational groups and apartment house growth has been found in all size-groups of cities. In the two groups of largest cities and in the smallest towns in the study, evidence exists of a connection between the commercial character of cities and the multi-family trend. In the medium sized cities, from 100,000 to 500,000, however, the industrial cities show the larger apartment increase and, in the 72 cities with populations from 50,000 to 100,000, occupational type seems to have no influence on the construction trend. In addition, these classifications sustain the statement made in the previous installment of this article

to the effect that the apartment tendency of the period is not a matter of limited scope nor does it follow a few, easily isolated influences.

Municipal Regulations and the Apartment Trend

The period from 1921 to 1928 was marked by the deliberate efforts of an increasing number of cities and towns to direct and control, or at least, to have some influence on their physical development. The major forces underlying this movement were undoubtedly the urbanization of the population and the extension of the police power in other fields to meet the problems which sprang up in the increasingly mechanized form of economic society. These forces, of course, had been in operation before 1920 but a number of occurrences during and immediately after the World War emphasized the necessity for some sort of effective control and at the same time pointed out the first steps to be taken toward this end. These developments can only be mentioned here; but any adequate discussion of the subject should give attention to the advent of the steel-frame building, the multiplication of motor vehicles, the work of the United States Housing Corporation during the War, the passage of the first comprehensive zoning ordinance in the United States by New York City in 1916, and the efforts of the Advisory Committee on City Planning and Zoning of the Department of Commerce to promote approved practices in the drawing and administering of zoning ordinances.

What influence have these municipal ordinances, which aim to control, in some degree, the use of urban real estate, exercised on the apartment house trend? The experience of city officials and boards of zoning appeal in many cities has been filled with the complaints of property owners who wished to erect apartment buildings in districts zoned for single-family and two-family houses. Almost without exception the claims are made that the zoning ordinance is stifling the growth of an apartment house district, or that the single-family district is not properly laid out but includes considerable area in which apartments should be allowed, or that land values are so high, or that so much money was invested in the lot that any improvement less than an apartment house would be unprofitable. These statements, of course, are not to be taken too seriously but if even a third of them are approximately correct the effect should be visible in a slowing down of the apartment trend in zoned cities.

On the other hand, the proponents of zoning have made claims which suggest a possible connection between zoning and the multi-family housing movement. Zoning in almost all cities has, to some extent, stabilized land values. This steadying of values and the assurance of the character of a district on which it is based, according to this line of reasoning, should enhance the desirability of home ownership and act to increase the building of single-family houses. The creation of districts for single-family houses only should also reduce or at least lessen high, speculative land prices based on the possibilities of more intensive use and, in this way, make easier the construction of medium priced houses. Thus, the stock arguments of both the friends and opponents of zoning unite in suggesting that zoned cities probably have experienced the apartment house growth in less degree than the unzoned cities.

Table VII presents data for testing this hypothesis. The classifications were made on the basis of zoning progress reports issued by the Division of Building and Housing in the Department of Com-

merce. The dates of the passage of the ordinances are given only in years, so that only those ordinances enacted up to the end of 1927 were counted. To include 1928 ordinances would throw into the class of zoned cities many whose ordinances were passed in the latter part of 1928, and therefore, could have had but slight effect on housing construction. In some cases the preparation of a zoning ordinance may stimulate apartment construction temporarily. Some builders may hurry their plans for apartments in order to avoid the zoning regulation. But this is a temporary phenomenon, and the pinch of inadequate apartment areas and the steadying influence on land values both would seem to be conditions felt increasingly the longer the ordinance was in operation. These facts suggested both the omission from the class of zoned cities of those zoned in 1928 and grouping of zoned cities according to the age of their ordinances.

In these classifications all cities with "use" regulations were counted as zoned cities. Some had use, height, and lot area regulations; in other words, they had "comprehensive" ordinances. Others had use and either height or area restrictions; a few had use regulation alone. The term "interim ordinance" refers to temporary ordinances passed as a "stop-gap" to prevent the invading of established districts by other and non-conforming uses during the period required for the preparation, discussion, and passage of the final ordinance.

Nearly all of the facts summarized in Table VII conflict with the belief that zoning, as at present practiced, has aided single-family home construction and, conversely, has retarded the apartment house movement. In fact, the opposite conclusions are clearly indicated. The entire group of unzoned cities (88) showed a multi-family increase of only 7.8% in the yearly total residential construction, while the 167 zoned cities gave a corresponding figure of 33.44%. The last percentage is increased to 33.85, if the 7 cities with "interim" ordinances in

TABLE VII. INCREASE IN PERCENTAGE OF TOTAL FAMILIES PROVIDED FOR BY MULTI-FAMILY DWELLING CONSTRUCTION IN ZONED AND UNZONED CITIES, 1921–1928.

Classes of Cities	Number of Cities	Percentage of Families Provided for by Construction of New Multi-Family Dwellings		Increase of Multi-Family Percentage 1921 to 1928
		1921	1928	
All cities zoned (up to and including 1927)	167	26.66%	60.10%	33.44
Zoned cities under 500,000 in 1920	158	16.36	40.09	23.73
Cities with interim zoning ordinances	7	10.44	18.06	7.62
Zoned cities without interim ordinances	160	26.97	60.82	33.85
All cities unzoned in 1927	88	14.66	22.46	7.80
Unzoned cities under 500,000 in 1920	85	9.20	18.19	8.99
Cities zoned from 1904 through 1920	20	32.69	73.07	40.38
Cities zoned from 1921 through 1924	87	22.56	50.70	28.14
Cities zoned from 1925 through 1927	53	15.71	33.44	17.73

effect in 1927, are eliminated from the total for cities having zoning ordinances.

An ever present danger in classification of this kind is that the results for one or more of the groups will be determined by the record of a very few large cities whose experiences may reflect conditions not felt in the great majority of the other cities in the class. To lessen that danger, cities of 500,000 and over were taken out of both the classes of zoned and unzoned cities. This reduced the number of cities only slightly but made a major difference in the number of families provided for in both groups. For example, the 88 unzoned cities in 1921 had a residential construction figure for all three types of residential buildings of 41,850 families; while the 85 unzoned cities under 500,000 had a corresponding total of only 28,150. Again, the 1928 figure for families provided for in multi-family houses in 167 zoned cities was 194,280, but in 158 zoned cities under 500,000 this total was 51,927.

The significant fact is that while this treatment lowered the multi-family increase of the zoned cities and increased slightly the figure for unzoned cities, the change is relatively so small that the general conclusion reached by the cruder method still holds. Apparently, restrictive effects of zoning ordinances on apartment house construction have been greatly exaggerated and whatever stimulating influence such measures may have on residential construction has evidently been felt much more by builders of apartment houses than by builders of single-family residences.[4]

Influence of Building Codes

Another direct effort of municipalities to control their development is the enactment of building codes. At many points the provisions of zoning ordinances and building codes are very close, at some they overlap, for example, the height allowed in buildings of certain types. In general, however, zoning ordinances deal with the use of buildings, their relation to other buildings, and to lot boundaries; building codes are concerned primarily with structural questions and sanitary provisions. In a certain sense, zoning ordinances are enlargements or developments from building codes. The latter have a much longer history in this country and their position without doubt helped the first zoning ordinances to gain both popular and judicial recognition. So well established are building codes in municipal affairs that only three of the 255 cities in this study did not have some sort of code at the beginning of 1928.[5] In addition, 12 cities had not reported the date of the passage of their ordinances and were, therefore, dropped from the following classifications.

The necessarily detailed and technical character of building codes places them largely beyond the scope of the layman's criticism and tends, therefore, to make them somewhat rigid. Building practices and materials may change so that what was once a perfectly reasonable

[4] Zoning apparently has stimulated residential building. At least the zoned cities as a class show larger ratios of persons provided for in all types of dwellings both to increase in population and to total population. In all the zoned cities for which 1927 population estimates are available, 141 in number, the total persons provided for in all new dwellings from 1921 to 1928 (estimated at 4.2 persons per family—the average size of family in cities in 1920) were 275.69% of the estimated 1920 to 1927 population increases as against a figure of 138.96% for the same relationship in the 68 unzoned cities which have 1927 population estimates. The percentage of total persons provided for to total population in 1920 was 38.40% for the zoned cities and the corresponding percentage for the unzoned cities was 29.10%.

[5] Building Codes (February 15, 1928)—typewritten report of Division of Building and Housing in Department of Commerce.

provision may become antiquated and in need of modification. But such revision has been difficult to secure. The intelligent citizen knows that he is handicapped by his lack of engineering knowledge, he wants safety in buiidings in his city, and he knows that many of the attacks on the building code come from persons whose "jerry-building" activities are hampered by the present code. Therefore he looks askance at most proposed changes including some that are entirely justified and thus plays directly into the hands of a certain number of building material manufacturers and dealers who profit by the overly strict requirements of the code and attempt to forestall any amendment of it which would affect the amount of their materials required in the construction of each building.[6] The result is that some building code requirements may prevent much needed economies in building costs and act as a brake on certain types of construction.

So thoroughly did many competent builders and engineers believe in the backwardness of building codes in force at the close of the World War that, spurred on by the high building material prices of the time, they secured the appointment of a Building Code Committee of the Department of Commerce in 1921 to study existing codes and their possible revisions. The plan was that the prestige of this Committee, both from its connection with the Federal Government and from its expert personnel, would aid in eliminating useless restrictions in building codes in all parts of the country and thus encourage new construction. This Committee has not drafted a completed model code but has published in pamphlet form their recommendations[7] on those parts of the existing codes which have been the subject of the most criticism.

Partly from this Committee's work and partly as a result of local agitation to stimulate building and to improve housing conditions, many cities have amended and revised their building codes. The questions to be answered in this study are—have these revisions had any bearing on the apartment house trend? Has the work of the Department of Commerce Committee shown any effect on the type of houses constructed in American cities up to the end of 1928?

One task of this Building Code Committee was to find out the status of building codes in the cities of the country. A typewritten compilation of data at the end of 1927 supplied the basis for Table VIII. This tabulation[8] gave the year in which the "code now in use was adopted or revised throughout," whether or not "active work is now being done on a fairly complete revision,"[9] and which, if any, of the Building Code Committee's recommendations were used in the revisions. On the last point an indication

[6] Other men in these businesses favor revisions which allow less expensive construction on the reasoning that if economies are realized in building, the market will be broadened and the result will be more materials sold. The first faction, however, either fails to see this possibility or else believes that the slightly larger volume of business which might result would not make up for the additional costs of wider distribution.

[7] Six pamphlets have appeared to date:
1. "Recommended Minimum Requirements for Small Dwelling Construction" (1923);
2. "Recommended Minimum Requirements for Plumbing in Dwellings and Similar Buildings" (1924);
3. "Recommended Minimum Requirements for Masonry Wall Dwelling Construction" (1925);
4. "Minimum Live Loads Allowable for Use in Design of Buildings" (1925);
5. "Recommended Practice for Arrangement of Building Codes" (1925);
6. "Recommended Building Code Requirements for Working Stresses in Building Materials" (1926).

[8] See n. 5.

[9] The words in quotation marks are the explanatory phrases used in the questionnaire sent out to obtain the information tabulated.

of adoption of the Committee's recommendation on small dwelling provisions, for example, does not mean that all of the recommendations were followed to the letter. The Committee makes very clear that some differences are necessary because of variations in climate or other local conditions.

For this study the regulations dealing with small dwellings were the most pertinent. The term "small dwellings" is applied to "dwellings intended for the occupancy of not more than two families between exterior or party walls." The report on their regulation was the first made because "the great scarcity of dwellings throughout the country, especially the small one and two family types, reported by various organizations investigating that subject during the preceding two years, made it apparent that any assistance the committee could render in reducing the cost of such construction would be immediately helpful."[10] Both because of the subjects covered in the report on small dwellings. and the avowed purpose of the Committee in drafting it, all cities indicating its use, either with or without reference to the other recommendations,[11] were grouped together to test the possible effect of these recommendations on the trend of apartment-house construction permits. This group included both cities which had used the recommendations in the original enactment or the thorough revision of their ordinances and those which were using them in "fairly com-

[10] "Recommended Minimum Requirements for Small Dwelling Construction" (1923), p. 4.

[11] A very large majority of the cities using the Small Dwellings report indicated the use of at least one other report.

TABLE VIII. INCREASE IN PERCENTAGE OF TOTAL FAMILIES PROVIDED FOR BY MULTI-FAMILY DWELLING CONSTRUCTION IN CITIES CLASSIFIED BY DATE OF BUILDING CODE ENACTMENT AND BY INFLUENCE OF DEPARTMENT OF COMMERCE BUILDING CODE COMMITTEE'S RECOMMENDATIONS.

Classes of Cities by Status of Building Code	Number of Cities	Percentage of Families Provided for by New Multi-Family Dwellings		Increase of Multi-Family Percentage 1921 to 1928
		1921	1928	
Cities adopting code or making last thorough revision before 1921.....	104	13.92%	32.81%	18.89
Cities adopting code or making last thorough revision 1921 to 1928.....	136	27.40	59.64	32.24
Cities using Department of Commerce recommendations on small dwellings (*including* those revising in 1927).....	41	19.27	35.67	16.40
Cities under 500,000 using Department of Commerce recommendations on small dwellings (*including* those revising in 1927).....	39	18.16	35.02	16.86
Cities using Department of Commerce recommendations on small dwellings (*excluding* those revising in 1927)...	26	21.92	36.40	14.48
Cities under 500,000 using Department of Commerce recommendations on small dwellings (*excluding* those revising in 1927).....	24	20.96	35.86	14.90

plete" revisions in progress at the end of 1927. Table VIII includes the apartment movement of these two groups and of the former one alone. The combined group is included on the supposition that, although the *complete revision* of some ordinances was not finished in time to affect directly the 1921 to 1928 construction trend, changes on important points were probably enacted in advance and may have influenced the type of houses constructed.[12]

The facts of Table VIII indicate that building code regulations have had an effect on the trend in housing. Codes whose enactment and last thorough revision was prior to 1921 apparently penalized apartment-house construction and the general effect of recent ordinances and revisions has been to relieve multi-family construction of this impediment. On the other hand, the work of the Building Code Committee to encourage small-dwelling construction seems to have met with fair success. Apartment house increases in all four groups made on the basis of some degree of adherence to the Committee's recommendations are well below the normal figures disclosed by other classifications. The cities in these groups are not bunched in any one size-group nor in any section of the country.

[12] The data of the report of February 15, 1928, were checked at all possible points with information in the recent "Building Code Tabulation," Department of Commerce (May, 1930).

Summary

These additional inquiries into the nature of the recent multi-family housing movement have shown: (1) The movement is not markedly different between industrial and commercial cities. In cities above 500,000, and those from 25,000 to 50,000 population, the commercial class cities had a stronger apartment house drift; in cities from 100,000 to 500,000 the reverse is true. The figures for cities between 50,000 and 100,000, despite wide variations in occupational character, showed no clear difference in apartment increase between those with large industrially or commercially employed populations. (2) Despite the arguments advanced pro and con in regard to zoning and its effects on residential development, zoned cities showed a much stronger apartment trend than the unzoned. (3) The facts of building code classifications, on the other hand, followed more closely the expected results. Cities with codes, passed or revised after 1921, experienced a considerably more rapid apartment house increase than those with older regulations. Cities which followed the recommended restrictions of the Building Code Committee of the Department of Commerce felt the multi-family trend only in a moderate degree.

GERMAN CORPORATIONS OWNING AND MANAGING ELECTRIC UNDERTAKINGS

By JÜRGEN BRANDT

I. General Data

THE total production of electricity by both public and private electric light and power enterprises in Germany amounted to about 32 billion kw. hrs. in 1929 as against 28 billion in 1928. Supposing that the total production of electricity of the whole world, including private industrial plants, might come to approximately 250 billion kw. hrs., the whole German production would constitute nearly 13% of that total. In other words, German output takes second place among all countries.

The output per capita of population in Germany in 1929 was nearly 500 kw. hrs. (in 1928, 442 kw. hrs.). If industrial plants generating power for their own use are excluded, the German production is about 17 billion kw. hrs., or 11% of the production of the world (150 billion kw. hrs.), and the output per capita is 270 kw. hrs.

Fourteen hundred seventeen public power stations with 17 billion kw. hrs. and 5800 industrial power stations with 15 billion kw. hrs. are participating in the German production. The public plants are generating light and power, chiefly for the use of customers; the industrial or manufacturing plants (engines and turbines in factories, mines, etc.), are generating power primarily for their own use and sell no more than about 7% of their output to customers.

Power sources are pit-coal, brown-coal, water power; and only to a very small extent fuel.[1] It is estimated that nearly 38% of production is generated from pit-coal, 37% from brown-coal, 13% from water power. The shares of brown-coal, and of water power especially, are increasing; the share of pit-coal is decreasing. According to statistics for 1928, which are the latest available, the participation of public and industrial enterprises in power sources is shown in Table I.

The raw brown-coal is produced by means of mining in daylight. Although it often has a percentage of water up to 50%, it is now being used directly for burning purposes in specially constructed boilers, whereas formerly it was first dried and then formed into briquets. The generating stations are presumed to be quite near the mine, long distance transmission not being economical.

The potential water power sources total approximately 7,175,000 H. P. If fully developed, they would effect an annual production of 26 billion kw. hrs. Up to the present, nearly 20% are developed, but even these are not always producing because they do not pay sufficiently. Nearly all water sources are located in Southern Germany and for this reason the current has to be transmitted to the North by means of large transmission lines with a tension up to 200,000 volts.

The character and extent of the market for electric service may be seen from the following data:

80% industrial and commercial enterprises
8% domestic service and municipal street lighting
5% railroads, street- and suburban railways
3% agriculture
3% own plants

[1] Fuel means oil.

plete" revisions in progress at the end of 1927. Table VIII includes the apartment movement of these two groups and of the former one alone. The combined group is included on the supposition that, although the *complete revision* of some ordinances was not finished in time to affect directly the 1921 to 1928 construction trend, changes on important points were probably enacted in advance and may have influenced the type of houses constructed.[12]

The facts of Table VIII indicate that building code regulations have had an effect on the trend in housing. Codes whose enactment and last thorough revision was prior to 1921 apparently penalized apartment-house construction and the general effect of recent ordinances and revisions has been to relieve multi-family construction of this impediment. On the other hand, the work of the Building Code Committee to encourage small-dwelling construction seems to have met with fair success. Apartment house increases in all four groups made on the basis of some degree of adherence to the Committee's recommendations are well below the normal figures disclosed by other classifications. The cities in these groups are not bunched in any one size-group nor in any section of the country.

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The share of domestic service is small compared with the domestic service in other countries, because the rates for retail customers are comparatively high. Electrification of railroads is only beginning. Only 1,327 kilometres (i.e., 825 miles) of track are electrified, or 2.5% of the total track system.

TABLE I.

Generating Stations	Generator Capacity in 1000 Kw. Hrs.	Production in 1000 Kw. Hrs.	Produced by		
			Pit-Coal	Brown-Coal	Water Power
Public	6,927	14,140	5,540	6,050	2,230
Industrial	4,805	13,720	5,000	4,260	1,340

Average rates are as follows: wholesale, an average price of 7 or 8 Rpf[2] (2 cents) per kw. hr.; retail consumers an average price of 25 Rpf (6 cents) for power, and 50 Rpf (12 cents) for light consumption.

The number of employees in the electric industry in 1925 was 88,526.

II. The Ownership of Electric Undertakings

The electric power plants of Germany fall into two broad classifications: (a) the private industrial plant stations, and (b) the public power systems.

(a) The private industrial power stations manufacture only for their own plant requirements. They are, in general, smaller than the public plants because they are older. In recent years most of the factory business in cases where their requirements of electric current have increased, have not enlarged their own power stations, but have covered their requirements by assistance from the public power stations.

(b) The public power stations producing on a commercial basis fall into four distinct groups, according to the nature of their ownership. (See Table II).

Private plants designated in Table II are not different from private plants elsewhere and need no discussion. Since the war they have not had a great expansion, because they have often had difficulties in obtaining new concessions. "Mixed system" means that the stock capital of these companies is partly in the possession of public corporations and partly in private hands, while operation and management is private. "Governmental ownership" means that the stock capital is totally in the possession of the "Reich," or of the states, as Prussia, Saxony, etc. "Municipal ownership" means that the power stations belong to cities or rural communities. The number of operating companies is smaller than the number of the power stations, for one company manages several power stations. The nominal stock capital comprises only the stock, not the long-term debts. Exact data of output are not available.

TABLE II.

Ownership	Power Stations		Nominal Stock Capital	
	Number	Percentage	Amount in 1000 RM*	Percentage
Private	856	60.5	874,000	32.4
Mixed System	195	13.7	618,000	22.8
Municipal	149	10.5	312,000	11.5
Governmental	217	15.4	899,000	33.3
Total	1,417	100.0	2,703,000	100.00

*Reichmark.

It is estimated that more than half of the production sold to customers is being generated by power stations belonging to public corporations. These public companies have been established on the same legal basis as the private ones. Their management is a commercial one and is being handled in the same manner as the private companies. Public ownership is combined with private operation and management.

As to rates, there are no great differences between public and private

[2] Reichpfennig.

companies. The companies publicly owned are not in a position to fix rates in a monopolistic manner. Most of these companies do not supply ultimate consumers, but sell their output to distributing stations, which hand it on to other distributors or to consumers. In theory each distributing station might establish its own producing station; practically it cannot be done as the necessarily high investments would turn over too slowly.

III. Some Examples of Governmental Enterprises

The above statements may be illustrated through the following analysis of the five largest companies belonging to the "Reich" and the chief countries, Prussia, Bavaria, Saxony, and Badenia. The names of the companies and their capital structure in 1928 are given in Table III.

TABLE III.

Name of Company	Stock Capital in RM.	Reserves	Long-Term Debt	Total Capital Invested in RM.
Elektrowerke A. G. Berlin	60,000	55,700	52,500	168,200
Preussische Elektrizitäts-A. G., Berlin	80,000	25,800	26,300	132,100
A. G. Sachsische Werke Dresden	100,000	73,000	157,800	330,800
Badische Landeselektrizitätsversorgungs A. G., Karlsruhe	21,000	9,500	54,700	85,200
Bayernwerk A. G., Muenchen	6,000	10,700	11,900	28,600

The five companies are "one-man-stock companies," i. e., companies each of whose stock capital is exclusively in the hands of a single public corporation.

The Elektrowerke A. G. Berlin was founded in 1892 by a private concern, the A. E. G. (Allgemeine Elektrizitäts-Gesellschaft, Berlin), with the purpose of mining brown-coal in the industrial district of Middle Germany. In 1915 it was changed into an electric undertaking with the purpose of exploiting the output of brown-coal in super-power stations. In 1917, during the war, the "Reich" acquired all the shares of the private company. Since then the plants have been continually enlarged and long distance transmission commenced. At the present time, four large super-power stations are working with a total installed capacity of 700,000 kws. Long-time contracts on supply of current have been made with the "Reichsbahn" (the German railways, a company also belonging to the "Reich"), with the city of Berlin, and with many other wholesale consumers. The company is also interested in various other companies. The stock capital is now 90 million RM. The long-term debt is as follows:

(1) 6½% loan of $7,500,000 issued in 1925 at 87 in two series by Harris, Forbes & Co., Lee Higginson & Co., and Brown Brothers Co.;

(2) 6½% loan of $5,000,000 issued in 1928 at 99½ as above.

The distribution of profit is fixed as follows. First the sinking fund is to be completed up to an amount of 10% of the stock capital. Then the shareholders will receive a dividend of 5% and the members of the supervisory board a remuneration of 7½%. The residue is at the disposal of the general meeting of the shareholders; it may be used for raising the dividend. Since 1924 the dividend has been 8% annually.

The balance sheet of the Elektrowerke A. G. as of December 31, 1928, is given in Table IV.

The profit and loss account shows a gross revenue of 14,440,220 RM.; operating expenses of 6,550,010 RM.; interest of 2,668,611 RM. The surplus is, as above mentioned, 5,221,559 RM. The balance shows that this company has been very successful and that considerable allowance for depreciation has been made.

TABLE IV.

Assets	(In 1000 RM.)	*Liabilities*	(In 1000 RM.)
Property, plants, mines, equipment..	158,483	Capital stock.....	60,000
Investments in other concerns.....	15,612	Surplus fund.....	10,000
Materials and supplies.....	975	Sinking fund.....	45,766
Advances to friends..	6,048	Other funds.....	2,250
Current debts.....	1,677	Long-term debts...	52,500
Cash.....	16	Current credits....	13,492
Miscellaneous.....	6,413	Surplus.....	5,221
	189,230		189,230

The Preussische Elektrizitäts A. G. Berlin, named "Preag," was established in 1923 by the Prussian State. It has been continually enlarged and now comprises several super-power stations with a total installed capacity of 130,000 kws. The capital stock now amounts to 100 million RM. and is to be raised to 125 million RM. Loans have been issued as follows:

Germany	26,200,000RM.	($6,240,000)
Great Britain and Netherlands.....	£1,200,000	($5,000,000)
United States.....		($4,000,000)

In 1928 the figures show:

Working surplus.....	6,400,000RM.
Surplus fund.....	8,000,000RM.
Sinking fund.....	17,800,000RM.
Other funds.....	200,000RM.
Dividends.....	5%
Output (Current sold)	290,000,000 kw. hrs.
Water-power.....	32%
Brown-coal.....	33%

In property and equipment are large reserves not given in the balance sheet.

The A. G. Sachsische Werke Dresden was founded in 1923. The company possesses some hard-coal and brown-coal mines and several super-power stations. Besides, it participates in some other electric companies. In 1928 the total output was 831 million kw. hrs.; the dividend 10%.

The Badische Landeselektrizitätsversorgungs A. G. Karlsrúhe was founded in 1921. It possesses two large water power stations with about 60,000 H.P. and widely extended super transmission lines. It is interested in several other electric companies, among them a Swiss company with a capital of 75 million Swiss francs, serving many cities in Badenia and also several distributing stations in Switzerland. In 1928 the total output was 201 million kw. hrs.; the dividend 9%.

The Bayernwerk A. G. Muenchen was created in 1921 by the Bavarian State for the purpose of utilizing the water resources in Bavaria. The company possesses several water power stations with a total capacity of 433,000 kws. In 1928 the reserves were 4.7 million, the sinking fund 0.6 million RM., the dividend 4%.

A summary of some of the data from the financial statements of the five companies as of December 31, 1928, is given in Table V.

The three companies, Electro, Preag and Bayernwerke, have made an agreement for the expansion and development of plants and transmission lines and for limiting the supplying districts; and to this end they have created a parent company or syndicate, the "A. G. fuer Deutsche Elektrizitätswirtschaft."

IV. One Example of an Enterprise of the Mixed System

An enterprise of the mixed system type should be mentioned in this connection, the Rheinische-Westfaelische Elektrizitätswerk A. G. Essen, shortly named the "R. W. E." The majority of the common stock of this company is in possession of public corporations, as cities and rural districts; but a part is also in private hands. The R. W. E. was created in 1898. It now has 17 power stations with a capacity of 529,-

TABLE V.

Name of Company	(In 1000 RM.) Gross Operating Revenues	Operating Expenses, Taxes, Retirements	Gross Income	Interest	Net Income for Stock Capital	Return to Stock Capital
Electrowerke	14,440	6,230	8,210	1,990	5,220	8.7%
Preag	10,520	6,030	4,490	230	4,260	5.3%
Sachs. Werke	26,160	14,210	11,950	8,120	3,830	3.8%
Bad. Landesel	12,840	8,560	4,280	2.280	2,000	9.5%
Bayernwerke	13,580	11,460*	2,120	1,910	270	.....

*Comprises a depreciation of 4,780,000 RM.

495 kws.; a distribution system of 2,040 kilometres (1,270 miles) of transmission lines; and an output of 2.1 billion kw. hrs. Further details may be shown by means of the balance sheet, as of June 30, 1929, in Table VI.

The long-term debts consist of the following loans:

(1) 7% loan of $10,000,000 issued in 1925 at 94½ by The National City Bank of New York, secured by a mortgage on the property;
(2) 6% loan of $15,000,000, issued in 1927 at 95½ as above;
(3) 6% loan of $20,000,000, issued in 1928 at 94 as above.

The distribution of profit is fixed as follows: first, the sinking fund is to be completed up to an amount of 10% of the stock capital. Then, the shareholders will receive a dividend of 4% and the supervisory board a remuneration of 10%. The residue is divided among the shareholders. The effective dividend since 1927 has been 9%.

V. Operating Results

As far as electric undertakings are concerned, the operating results of publicly owned plants are undoubtedly in most cases the same as the results of private ones. The public enterprises offer adequate services at the same rates. Their management is a commercial one. Economical administration is secured by their organization; they are strictly separated from public administration and public finances. The managers of the public electric enterprises are responsible only to an economic electorate, the supervisory board, and not to political assemblies, such as the Reichstag or State legislatures or municipal representative assemblies. The managers are specialists and business men; they often transfer from private industry into public enterprises, and vice-versa.

TABLE VI.

Assets	(In 1000 RM.)	*Liabilities*	(In 1000 RM.)
Property, plants, equipment	463,120	Capital Stock	181,000
Investments in affiliated concerns	126,580	Retirement reserves	37,380
Advances to subsidiary companies	66,130	Long-term debts	185,910
Loss in change of loan-capital	4,000	Insurance reserves	17,330
		Sinking fund reserves	161,270
Cash	320	Advances from affiliated companies	80,290
Current assets	93,530	Current liabilities	78,200
Materials, supplies	8,180	Surplus	20,320
Total	761,760	Total	761,760

Profit and Loss Account

Debit		*Credit*	
Operating expenses and interest	18,740	Gross revenue	60,680
Added to sinking fund	21,620		....
Surplus	20,320		....
Total	60,680	Total	60,680

There is naturally also in Germany the danger that political influences will assert themselves in the management of the public concerns and lead them to take steps for which they are economically unable to answer. This danger also exists for private concerns which require a concession. It will be remembered that the Fascist Government in Italy only grants concessions to those private undertakings which submit to the prevailing political system. It is the nature of things that every self-conscious and responsible government desires to have a voice in such important branches of political economy as the supplying of electricity, gas, and water. It is not expected that in the political distribution of forces in Germany public bodies will misuse their political power in order to force public undertakings to take uneconomic measures.

The public undertakings are treated as going concerns of economic character. They balance their receipts and expenditures, they pay their taxes and wages, they meet their interest obligations and depreciation charges out of net operating revenues, like other business organizations. The difference between private and public undertakings exists only in the use of profit. The private owners use the profit for themselves, the public owners for public purposes.

Experience shows no principal advantage for private undertakings. Besides, no actual competition takes place between public and private electric undertakings in Germany, as the supplying districts are limited by contracts or franchises. A company which intends to operate in the district of another has only one means of so doing, namely to buy up its common stock. But this way is not always available.

VI. Attitude Toward Public Undertakings

Public ownership and operation in Germany is not a matter of principle or of party policy, as is often the case elsewhere. Public opinion does not see in public operation a step toward socialism. Germany has had public undertakings since mediaeval times; and therefore public services, such as railroads, post, railways, water, manufactured gas and electric supply, are always considered to be a public function. Germany believes that its welfare can be promoted best by public ownership of certain types of public utilities. There is only some doubt about the question whether public corporations should operate in other business enterprises, such as banking, housing, printing establishments, etc. They belong to the twilight zone separating public and private functions—its limits are not exactly fixed.

MANAGEMENT FEES OF PUBLIC UTILITY HOLDING COMPANIES

By WARREN WRIGHT

MANAGEMENT fees are financial items levied upon and paid by operating utility companies to management companies for services rendered. These services may include engineering, financial, credit, accounting, legal and other advice and help. The managing company may own and control the operating unit; or the relationship may be a purely contractual one, existing between companies in no other way related. The customary practice is for the management company to own its operating companies in order to insure a market for its services and also to use such ownership as an investment. It will be assumed in this paper that operating companies are owned and operated by management companies in a relationship often described as that of parent and subsidiary.

Management fees are normally supposed to be commensurate with the amount of services rendered by the parent organization to the subsidiary. The fees are determined, oftentimes, as a percentage of the gross revenues of the operating units, fluctuating as the gross revenues change in amount. In some instances, however, the fees are levied in lump sums, and cases are known where the fee was a percentage of net revenue. To have some idea of the relative significance of management fees, a comparison was made between the percentage of gross revenues allowed for fees and for depreciation. It was found that management fees were between 4 and 5%, while depreciation amounts were typically 10 to 13% of gross revenues. The fees are classified by the operating companies as operating expenses; and, as such, come under the supervision of the state regulatory commissions. It is this problem of what to allow as fees and on what basis such allowance should be made or judged which forms the subject matter of this paper.

The Management Relationship

Usually a contract is drawn up between the holding company, which controls its operating companies through ownership of the common stock, and the subsidiary operating companies which render services directly to consumers. The law allows companies mutually owned to contract with each other, because the business corporation is cloaked with a legal personality apart from the men who organize it. Difficulties at once arise because the holding company, often organized and authorized in another state, is seldom within the direct control of the regulating commission of the state wherein the operating units function. Furthermore, the holding company, in so far as it is not an operating company, is not subject to any public utility regulation because it is not considered as being "affected with a public interest."

The holding company relationship affects the operating company vitally, because ownership carries with it control. The operating unit is thus bound by inescapable ties that do not come within the direct supervision of regulatory commissions. However, these contracts may be regulated indirectly in the event that any of these ties can be shown to be contrary to the well-being of the

operating company's customers or, sometimes, its creditors.[1]

In these relationships the holding company has certain rights, such as freedom from interference in making valid contracts and the right to the enforcement thereof in payment for services. Also, the holding company has an obligation to the public which permits contractual bargains, to avoid fraud, collusion, or evasion of statutory obligations, and to suffer its contracts to be judged in the light of general social welfare.

Likewise, the operating company has rights and duties under the law. A fair return on the fair value of its property devoted to public service must include reasonable compensation for those services bought from the holding company. The operating company has the duty to render to consumers such services as are in reasonable proportion to the rates allowed to be charged. Such a duty is prior to any contractual obligations to owners, though the law seeks to protect both consumer and owner.

In surveying holding company practices, so far as management fees are concerned, we need to base our judgment wholly upon the results of the parent-subsidiary relationship, not upon any theoretical objections we may have to this use of the "corporate fiction." All parties to contractual relationships have rights and duties not only to each other but to the public, the nature of which varies as economic circumstances change. Use of the "corporate fiction" at all times depends upon its general social usefulness.[2]

Practical Difficulties in Regulating Management Fees

The various state commissions, charged with the duty of seeing that rates are reasonable and services adequate, generally have authority to pass upon the items of expense which enter the operating accounts of the utilities. Consequently, only those that are deemed reasonable can be deducted from operating revenues to arrive at some figure which can be used in estimating the return on the fair value of the property devoted to public service. If a commission decides that the fees paid to the holding company for management services are too large, it may order some part of the fees deducted from reasonable operating expenses or from the amount allowed as fair return. That is to say, if the fees are adjudged too large, the excess should not come out of rates, but should be deducted from net income, assuming that no other way is found by which the operating company can pay these fees without cutting into its fair return.

The practical difficulties herein involved appear to be these: (1) Should the companies or the commissions sustain the burden of proof as to the reasonableness of the fees compared with the services rendered? Inasmuch as the burden now usually rests upon the commissions, they are prevented to some degree from correctly ascertaining the facts. (2) A problem of jurisdiction develops from the interstate character of the holding company and the intrastate character of present regulation.[3]

[1] However, the courts, to whom appeals from commission decisions are taken, are loath to interfere with any business contracts that follow long-used legal forms and customs. See *Southwestern Bell Telephone Co. v. P. S. C. Mo.*, 262 U. S. 276 (1923).

[2] "The law is the sanction that the ruling classes accord to existing economic conditions. It must proceed from the economic life and change with it." (Achille Loria, *Formative Influences of Legal Development*, edited by Kocourek and Wigmore (Boston: Little Brown, 1918), Part 2-B.

[3] Except, of course, in the case of railroads and the telephone. The holding company is cropping up in the railroad field again. However, for treatment of a telephone holding company as subject to state control because of its close ownership of local units, see *Re Michigan Bell Telephone Co.*, P. U. R. 1926 C 620-1.

(3) To trace costs in those cases where services are not definitely given to particular units in known amounts introduces added complexities. (4) How can regulatory officials cope with the resistance offered by some holding companies which are not interested in connecting costs and rates in any definite manner, but are concerned chiefly with dividends to be gotten in one way or another? (5) Should or can an allowance be made for the readiness-to-serve costs of parent organizations, while still attempting to relate fees to costs in the interests of reasonable rates and adequate service? What follows is a discussion of three tests which have been used in efforts to overcome these difficulties in arriving at a fair allowance for fees for management services.

Market Test for Fees

When the fees charged for management services appear to result in "amounts that compare with the cost of administering other companies" and rates are observed to be the cheapest in the state, while the "holding company has done pioneer work in the gas industry," the operating company is entitled to pay for the management of the business whatever is needed, and the commission will not attempt to substitute its judgment for that of the directors.[4] This doctrine is based on the theory of opportunity cost, for it is evident that the operating company can afford to pay fees that are no higher than those charged by other management companies, even though the contractual relationship prevents any choice on the part of the operating company.

Use of the market test is conditioned by the facts in each case. Even when the price of the services rendered by the holding company is below the normal market price level for similar work, the fees have been disallowed as part of operating expenses because no logical reason can be assigned for apportioning all of a typical holding company's expenses among its subsidiaries when the "public is not benefited by all the holding company expenses."[5] It must be said, however, that such an attitude threatens to usurp powers of management, for the commission cannot use its judgment to replace that of the operating company officials in choosing business services, except indirectly in acting upon rates and operating expenses.[6]

No clear standards or general rules are set up by use of this criterion. When used, it gets at the cost of servicing the operating units only in an indirect manner, for reasonableness is determined with reference to comparative competitive cost in the industry. If the conditions are so peculiar as to debar any market comparison,[7] the test fails. Use of this bench mark may prolong that theory of regulation which is based on the philosophy of letting well enough alone. Such an attitude may result in rates that are something more than reasonable, in so far as expenses go unchallenged. The operating company is as likely to suffer at one time as to profit at another by use of this test of comparative management costs, supported by evidence of comparative rate levels.

[4] *Wood v. Elmira W. L. and R. Company*, P. U. R. 1927 B 414-15. Use of this test in this way serves to encourage management companies by allowing them as fees some reward for past services without at once cutting rates down to actual costs.

[5] *Lincoln Water and Light Company*, P. U. R. 1917 B 153.

[6] *Ibid.*

[7] Such comparisons are more readily available in the case of construction and engineering services for which an independent market is more likely to exist than in services of a general executive character. See Barclay J. Sickler, "Regulation of Public Utility Integration on the Pacific Coast," 6 *Journal of Land & Public Utility Economics* 51–64 (February, 1930).

Obviously, this method disregards the economic principle that the most efficient service should be utilized, not that which is as good as the average.

Still, the market test is better than none, or better than the docile acceptance of any charge the holding company may see fit to impose. It is best suited for checking results obtained in other ways, when the desire is to reward or penalize an operating company for services the costs of which cannot be directly traced. Too often, however, comparable situations are lacking, and then the market test degenerates into rather haphazard estimation. Perhaps many people are unaware of the real nature of this test, for some cost-of-service enthusiasts seem to forget the necessity of checking all actual outlays against competitive costs to arrive at a reasonable decision on what to allow for the good of the industry and the interests of consumers.

Cost of the Service as a Test

Part of the problem is concerned with getting data on which to judge management fees; part consists in methods of using the data. At the moment we are concerned with attempts to use the cost-of-service test, where the holding company is willing to supply the data it has, in an effort to show the need for rates which will cover these costs.

Although most commissions have not asked for cost figures showing outlays made by the management company, that challenge is always imminent, and when it seems that some items will be disallowed some holding companies have supplied the data to justify their charges. The American Telephone and Telegraph Company, on the contrary, has maintained that it is not within the province of the commissions to know what holding company profits are, so long as the services seem to be worth the fees paid.[8] Nevertheless, in order to arrive at any useful judgment of the reasonableness of operating expenses, it seems essential to have the costs of management services at hand.

An attempt was made by a holding company to have certain sums for interest on loans which had been made when the properties were built included in the operating expenses of its subsidiary corporation. The commission thought that this interest should come out of income after operating expenses, because the cost of loans is seldom allowed in any other way. The commission felt that the loan had gone into the rate-base as part of fair value, and to allow it in operating expenses would permit a double return.[9]

It must be admitted that for all practical purposes the commission will consider the burden of interest payments in allowing rates and, although the practice is not to allow interest sums to become an operating expense item, they are treated in much the same way as these expenses. However, the commission is faced with the problem of encouraging progressive service and assuring continuous operation by some company. If the terms of the loan were very favorable, considering the market cost of money, it might be good economy to allow something extra to enter operating expenses to reward the holding company.[10]

The Wisconsin Railroad Commission, on its own motion, investigated the fees

[8] Letter from C. A. Heiss, Comptroller of the American Telephone and Telegraph Company, dated November 15, 1928. Also, quoting from a brief used in a recent Bell rate case, "the charge is intended to cover the value of the service to the Michigan Company and not its cost."

[9] *Re Glenville Natural Gas Company*, P. U. R. 1915 F 853.

[10] "Our fees are intended to be high enough to afford a return sufficient to attract the necessary capital and ability." (Letter from L. R. Nash, Stone and Webster.)

charged by the Interstate Fuel and Light Company, which were attached to the fixed capital account of the Wisconsin Fuel and Light Company. It was disclosed that 10% of the direct charges to capital accounts was added and credited to the parent organization. This amount was to be in compensation for the management and supervisory services rendered by the holding company. No evidence was given of when this work was done; no cost data were presented at the hearing. The Commission felt that nothing was at hand with which to judge the reasonableness of the fees, and that the common ownership of the two companies made it incumbent upon the operating or managing unit to show why this fee should be allowed. The practice was ordered stopped until evidence was produced showing the specific services for which charges were made. Also such charges must bear a close relation to the costs of services to the holding company.[11]

In another case, the fee was 15% of the cost of the engineering work done by the holding company. The Commission ruled in similar fashion. It approved a new contract whereby the cost of the services performed by the holding company for all of its subsidiaries was divided into the cost of the services for the Wisconsin company, and this percentage charge was to meet the overhead costs and enter operating expenses. Furthermore, it was disclosed to the Commission that the holding company arrangement was a scheme for servicing the operating companies, and not a device for extracting a profit on the work done. The charges were to be figured only upon actual work.[12]

The attitude of the Wisconsin Commission seems to guarantee to the consumer that rates will be based upon costs so far as they are obtainable. This policy may be short-sighted if it discourages economic organizations which could not show costs for everything they do. It may put a premium upon subterfuge by means of which companies may seem to comply, whereas they are really getting income from operating expense items otherwise disguised. Proof is not readily available, on the other hand, to show that it is bad social policy to allow the holding company to charge fees higher in Wisconsin than the costs of service, in order to build up the utility system elsewhere. Protection for the consumer can be had if the holding company is forced to show cause in this respect. For example, in so far as the Commission refuses the small profit the Bell Company has made by charging for telephone sets more than they cost the parent company, though at a rate below the market, the consumer suffers because of the obstacle thus placed in the way of induced inventiveness.[13]

The Commission, in trying to find costs and then base its judgment of the fees upon them, is assuming a heavy burden because so often the costs to a particular company cannot be apportioned, and the holding company is forced to falsify its data. Moreover, scrutiny of holding company books adds to the work of the regulators, though it may prove useful if it leads to the practice, among holding companies, of tracing costs wherever possible. Oftentimes

[11] *Re Wisconsin Fuel & Light Co.*, P. U. R. 1927 E 213-4.

[12] *Re City Water Company*, P. U. R. 1927 E 215.

[13] No doubt after the Commission refused the more-than-cost figures for telephone sets to enter fees, the Bell company saw to it that future cost figures were at least as high as the market rate. (The Bell Company is the American Telephone and Telegraph Company, the Bell parent organization.) See *Re Wisconsin Telephone Company*, P. U. R. 1927 A 592-3. For a decision by the Wisconsin Commission, in effect the reverse of the present one, see *Bogart v. Wisconsin Telephone Company*, P. U. R. 1916 C 1048 ff.

the costs involved in tracing and apportioning service expenditures will outweigh the fees. Furthermore, we need to be warned against any policy that tends to create unnecessary antagonism between public utility managers and the commissions, for even though tracing specific cost items is technically correct, so far as the law is concerned, the problem is a practical human one, and the principles involved—reasonable charges and efficient services—are of more importance than the theoretical claims set forth by those who favor complete cost analysis.[14] Finally, the difficulties facing any state commission in getting cost data from foreign corporations are great enough to make us reserve judgment as to method, at least until the end of our discussion.

In addition to the direct costs shown on the books, we need to consider what may be called alternative costs, those which would obtain were the holding company nonexistent. Should the operating company attempt to get along without these particular management services, we can measure the economy of this procedure in the increased unit costs that would follow, assuming the holding company at present is instrumental in lowering unit costs of service. With this alternative cost situation in mind, we can check present costs better in terms of what the fees should be to continue desirable management service. We need to realize, however, that where fees are cut to the bone by regulators the holding company, more mobile than the operating unit, can easily withdraw from an industry, or part of it. Use of this aspect of the cost test approaches closely what we will consider under the value-of-the-contract test, showing that no bench mark is sufficient unto itself.

Most of the public service industries are naturally large scale; one hesitates to prophesy their future size for fear of being too conservative. A great amount of the experimentation and invention carried on by parent companies is paid for, if at all, through management fees and part through dividends on common stock. This kind of cost cannot be apportioned precisely. The Commission in ruling upon the allowable proportion of unallocatable costs must take care not to sacrifice the development of the industry and of the service for the immediate pecuniary advantage of the consumers.

When a holding company's chief interest in its operating units is financial, there may be a temptation to milk the operating units through management fees. When the fees are over-large as compared with the cost of the services, they enter the subsidiary's operating expenses and enhance the need of earnings, thus leading to forceful demands for rate increases or postponement of rate decreases. In the case of holding companies which are chiefly concerned with the engineering aspects of the industry, we are perhaps more likely to find the fees approximate costs of the management services. Mr. Martin Insull has often said that the parent company is as vitally interested in the efficiency and economy of the operating units as are the consumers, for the gains in economy of the operating units are reflected in greater net income out of which dividends are payable. Perhaps, then, the

[14] Economists recognize a distinction between expenses (money outlays) and costs (sacrifices). This distinction has some pertinence in this problem. Cost analysis should mean apportioning the relative burdens involved in reaching certain beneficial results. To stop when money expenditures are known and think actual costs have been found is erroneous. As an illustration, the fee-contract in the telephone industry—using a percentage of gross revenues—does not appear an uneconomic apportionment of these cost burdens when we consider the difficulties in the telephone art and the diffusion of benefits from the research activities of the parent company.

commissions do well to force the issue by using the cost test and making the parent show its sincerity in terms of services actually rendered.[15]

In this section the purpose has been to illustrate the application of the cost test, and to evaluate its usefulness. Costs have been found in direct fashion in Wisconsin, and some sort of allocation has been accomplished. At least the Commission has apparently succeeded in getting what figures the holding companies see fit to offer as proof of the cost of management work.

The advantages of this test are evident. It sets up definite objective criteria by which to measure fees. Under the Wisconsin practice it places the burden of proving the reasonableness of fees upon the holding companies by compelling the operating units to show costs, save as the commissions are compelled by the courts to show why the fees are unreasonable when not allowed. This test works in the direction of a more businesslike method of fixing rates upon the basis of expenses incurred by operating units in the public service.

The weaknesses of this test appear to be the difficulty of allocating some overhead costs, such as research, clerical, and advisory work, to particular operating units; and the danger of discouraging a wise application of energy or capital to the development of the utility services. The matter of jurisdiction is not hopeless of solution, for some state commissions have forced foreign corporations to come into the state and display their book data or suffer their fees to be reduced. We will find that another test, that of the value of the contract, tends to bolster up the cost test where support is most needed. And, it must be emphasized, any use of the cost test is partly dependent upon market comparisons which were described in the previous section.

Value of the Management Contract

Among other tests used for determining whether the management fees should be allowed is the criterion of the value of the contractual relationship. The American Telephone and Telegraph Company, a holding company, has assumed the burden, in most Bell cases where rates are in dispute, of showing the value, not the cost, of the contracts which require the operating telephone companies to pay some percentage, now 1½%, of their gross revenues for management services received from the parent company. Of course, these contracts involve a variety of services, usually technical and financial, depending on the needs.[16]

Using the value test, the commission compares the cost, in fees, with alternative costs were the operating units to perform the same work themselves. The costs to the holding company are not forthcoming in this test, and the attitude of many a holding company has been one of severe hostility to any attempt to force a showing of book data, some of which cannot be had by any method of precise cost allocation.[17] So long as the fees seem fair after comparing them with costs of independent unit management, and are so minor as to have little effect upon rates, it would seem that the burden of proving them unreasonable would be too great for quick accomplishment by the commission. The courts have allowed them, save where it could be shown

[15] Attention is called to an excellent decision handed down by Judge Dietrich in *Idaho Power Co. v. Thompson*, 19 Fed. 2nd. 572 (1927). The decision uses the best-interests-of-the-operating-unit as a test.

[16] Oftentimes companies outside of the Bell system make these contracts on the same basis.

[17] One reason is the difficulty of finding costs, and another may be the effort to hide the aid given by the operating units.

that the amounts involved and the methods used were detrimental to the operating units and the rate-payers.[18]

When the economies effected through a contract with a holding company are clearly apparent, little question will arise as to the propriety of the fees, even if the precise cost of the services is not found. It is not enough for the commission to say that much of the work done by the management company is really work that owners normally perform in their own interests. So long as owners spend money on their properties, fair rates must include provisions for these expenditures, but not necessarily for dividends. In other words, dividends are paid if and as earned but form no part of the operating expenses. Management owners can lay claim, lawfully, only to their share of the rates necessary to compensate for useful services and outlays. It is thus an error to assume that servicing costs are compensated in dividends paid by the operating to the holding company. The test which makes use of the value of the contractual relationship, based upon market conditions and alternative service plus apparent improvements, may encourage owners to increase their efforts to improve services with no fear that rates will come down, or items in expenses be struck out, once the economies are realized.[19]

From the point of view of the commission, use of this test is simple, easily changed, and provocative of little ill feeling. This test does not afford cost figures however, and often leads to resentment on the part of the regulators if the holding company defends its position warmly. It insures that the fees will be judged, though broadly, but it blocks the efforts of some commissions to locate the actual costs of every kind of service and threatens, at times, to result in subterfuge.[20] When a holding company services operating units in different regions, the value test is useful in allowing fees to be collected where they can be paid, in the interests of an entire organization.

The value test affords some protection against extortionate rates. The commissions can challenge the holding company to prove the worth of its services, and defend the contract fees. Where costs are available, they can be shown, so as to buttress the value comparison. The check afforded by the alternative-costs rule permits wide limits for discretionary judgment as to reasonableness, and to the encouragement of management zeal.[21] The law requires adequate services from the utilities and the holding companies cannot avoid the necessity of helping their subsidiaries to comply with the law, if we assume these parent organizations are in the industry permanently.

Yet the disadvantages that accompany use of this test are not easily dismissed. No definite cost standards are set up, and little is effected in the way of paring down rates to the level of most efficient operation. Use of this test often

[18] *Houston v. Southwestern Bell Telephone Company*, 259 U. S. 318 (1921). It must be borne in mind that the Commission is not the financial manager of the corporation, and is not empowered to substitute its judgment for that of the directors of the corporation.

[19] Some hold the opinion that regulation is not concerned with profits made in any direct way, but only in rates and services. Perhaps more generous rates will lessen the tendency to use fees as one means of tapping the operating revenues sub rosa.

[20] Before the Wisconsin Railroad Commission, U-3538, the Bell companies asked for allowances for sets at cost plus a margin, lower than market prices for the same instruments. The Commission demanded specific cost and lowered the allowance entering operating expenses, much to the dismay of the American Telephone and Telegraph Company officials.

[21] Mr. C. O. Ruggles thinks that "at present we are regulating profits, encouraging a high rate base (by capitalizing unallowed costs) and making for padded expenses." See "The Regulation of Electric Light and Power Utilities," 19 *Papers and Proceedings of American Economic Association* 179–196 (March, 1929).

involves judicial review, for frequently the holding company will fight the commissions' decisions unfavorable to the companies on fees that seem to be inflated. On the other hand, use of this test permits some compensation in management fees for the services that parent companies are ready to render when need arises. To supply such services requires the maintenance of a central staff organization. This test seems to violate the theory of obligations to public service, at least in so far as the holding companies are able to defy the commissions in refusing to supply cost data.

Contrasting this test with the cost-of-service criterion, it does not seem as if the difficulty of finding and allocating all costs is any greater than the task involved in imagining what the operating companies' officials would do were they free to choose independently of the wishes of their owners. At best, this test is useful chiefly as a check in balancing results obtained in other ways. Fees are not reasonable save as they are of an amount necessary to attract skill and capital into necessary public service and from this point of view the value of the contract is a necessary comparison to have at hand.

Federal v. State Control as a Possible Solution

In brief, the problem of management fees, as viewed here, lies in the lack of an adequate test of the fairness of the fees, and the apparent lack of control over the holding companies which collect the fees and render the services. The situation is doubly intricate when it appears that the fees are used as means of milking the operating companies, a condition which we have not discussed at length. Even if we assume that the fees are paid to companies which actually serve the operating subsidiaries in many necessary ways, and thereby bring about at least some economies of large-scale production, the problem of testing the fees themselves remains.

Federal Regulation. One practical difficulty is presented by the country-wide operation of holding companies and the local character of present regulation. Some believe that the only way out of the tangle of intrastate control and service by extra-state companies is through national regulation of all the companies involved, including the parent organizations. "No one outside of the officials of the parent company knows what actual costs are undergone. There is no law requiring them to disclose their costs."[22]

Of course, the law does not at present provide for national control of holding or operating companies, unless operations of the latter are interstate. The former companies themselves do not carry on a public utility business and do not come directly under state regulation as do operating companies. Some interstate control of telephone and power companies is exercised under federal laws, but applies to operating companies only. Because of the legal fiction of corporate entity holding companies deny that they are actually engaged in serving the public even indirectly.[23] What the courts will say is largely problematical and can only be determined when circumstances are such that the results of the holding company contract and the

[22] Letter from O. C. Merrill, dated April 25, 1929. Mr. Merrill was then the Secretary of the Federal Power Commission.

[23] See I. M. Wormser, *Disregard of the Corporate Fiction* (New York: Baker Voorhis Company, 1927) p. 40. Mr. Wormser writes that the courts will lift the veil of the fictionary separate identity of the holding company, for instance, if it becomes apparent that social interests are defeated by use of the fiction.

manner in which the fees are collected are uneconomic in the way they affect consumers.

Federal regulation of parent companies, seeking to have costs disclosed, is not the only way of controlling fees. At present most state commissions can disallow the fees whenever they think they can show before the courts why their action is fair. The Wisconsin Commission has comparatively little difficulty in getting some of the facts it wants, or at least developing willingness to give all the data that are available.

The situations are largely still local ones. It is not clear that the problems will become as standardized as those of the railroads, because of the peculiar needs of different communities. Until development of holding companies results in concentration of control in still fewer hands there can be little evidence that national control is needed. Furthermore, the tendency seems to be toward regional control, not national, and this can be handled best by cooperation among states.[24] As an educational experiment, national control is attractive; economically it appears unwieldy and unnecessarily costly because of possible duplication of work now being carried on by the states.

Regulation Now a Sufficient Corrective

Mr. Halford Erickson, of H. M. Byllesby Management and Engineering Company, Chicago, represents another group who feel that the "fees are investigated and passed upon by the commissions, especially in rate cases. The income of the holding companies and the properties they control are in effect fixed by law."[25] This group also feels that the fees are generally less than the cost of the service rendered and that the holding company is chiefly interested in maintaining the excellence of its properties and gathering its financial rewards through sales of operating company securities and dividends from operation. This is probably true in the case of companies which are primarily engineering organizations, or management experts.

The practical difficulty of this attitude lies in the manner in which the holding company is able to refuse access to its books to the state commission, on the ground of not being an operating company, or utility. Punitive action by the commission, if supported by the courts, can bring into purview the data wanted. However, oftentimes the courts decide that the fees are fair, and refuse to allow rates to be lowered, and the holding company wins its point. So often the attitude of the parent organization is explicable on the basis of not knowing the actual costs, plus resentment at the treatment accorded them by cost-biased regulators.[26]

More strength is given to the position of this group when we admit that most expert fees for services are collected with no specific allocation of cost. The upper limit is what the company could have done the work for itself, granting that the matter of ownership forbids this alternative, even though we assume

[24] Mr. Merrill describes one such instance of interstate control by states. See his pamphlet, *Problems of Superpower*, Federal Power Commission, Washington, D. C. (June, 1929).

[25] Taken from a speech by Mr. Erickson, *Proceedings*, National Association of Railway and Utilities Commissioners, 1927, p. 125.

[26] That is, too often costs are regarded as something that can be handled and used without other considerations. Even though costs are known for present service, what of the future, when efficiency must be induced and rewarded? What of the socially useful policy of tapping community resources where it is feasible in order to build the system in other places where the wealth is yet to appear? Protection is had against abuse through commission powers of disallowance.

the comparisons. Opponents of this position seem to weaken their case by criticism of defiant holding companies for not exposing books that the law at present does not require to be brought to public gaze.

The courts have seldom gone over the heads of the commissions by ordering fees to be allowed except in the Southwestern Bell Telephone cases, where an issue was made of common control and the fairness of the amounts of the fees. Federal control could do little more than present regulation in getting at costs, especially those which are not easily traced or apportioned. Threats of federal control have had the effect, in some cases, of encouraging holding groups to cooperate with state commissions. What is wanted, so often, is not the actual figures in entirety, for they often are not large compared with other operating items, but willingness on the part of the parent company officials to show their hands.[27]

If the holding companies were declared public utilities and thus brought under regulation directly, it does not appear that more adequate control could be had than now obtains indirectly. The work and expenses of the commissions would be increased out of proportion to possible benefits to consumers. It cannot be assumed lightly that the courts would agree with the effort so to legislate.[28] Federal control would involve regulation over banking companies, investment groups, engineering units, and management groups, in all aspects.

Summary

"It might be said that in general the commission's practice has been to allow for management services by holding companies only such amounts as it deems represent the value of such service to the operating company, rather than the cost to the holding company."[29] However, only the lowest reasonable amount is allowed in each case. To get at this lowest amount, costs are essential, and the tendency is toward forcing the holding companies to disclose their costs by fixing amounts for fees so low that the management companies are willing to come to hearings and show their books.

We may review here some methods of overcoming the practical difficulties involved in judging reasonableness of management fees.[30] Justification of the fees in terms of what the services of management cost should be the burden of proof assumed by the management companies.[31] It follows that all available costs must be supplied and specific allocation used where possible. However, the courts may have to be forced by legislation to see this situation from the cost point of view.

Foreign corporations will be compelled to come into intrastate jurisdiction, if the commissions can make good before the courts their demands for cost data. There are great possibilities for interstate cooperation in tracing service results in an entire utility system if the state commissions realize that the alternative may be federal control.

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[27] Not infrequently it seems that the holding company fails to prepare its case, in behalf of the operating company expense items, in any way suggestive of a realization that utility regulation is a part of the economic environment. See, for example, *Re Knoxville Gas Company*, P. U. R. 1922 E 526.

[28] "Such a requirement (state power over foreign companies' securities), would complicate financing and regulation beyond toleration." David Lilienthal, "Regulation of Public Utility Holding Companies," 29 *Columbia Law Review* 440 (April, 1929).

[29] Letter from the *California Railroad Commission*, dated December 20, 1928.

[30] See page 416, *supra*.

[31] See especially *Re Wisconsin Telephone Co.*, P. U. R. 1925 D 661.

Untraceable costs seldom are so large a part of total costs as seriously to delay regulation. Use of the value test, though fraught with dangers of extortion and resting on the fiction of separate entities of parent and subsidiary plus the economic principle of substitution, will serve to keep the upper limit of the fees within temporarily reasonable bounds; meanwhile pressure can be exerted for stricter apportionment and allocation of general expenses. As management services become standardized, it should become easier to allocate all costs in terms of specific work performed. What costs remain untraceable can be fitted into a scheme of apportionment which places the burdens equally upon those operating companies best fitted to shoulder them by tapping those communities which are farthest advanced for the sake of utility development in less mature regions. This tapping might be accomplished by allowing fees that are as high as the traffic would bear were the management contract abolished and the operating company to manage itself. Such a scheme allows the discretionary generosity often needed to encourage capital into the utility industry from competitive markets.

In allowing for the readiness-to-serve-costs of management companies, incurred in rendering what might be called stand-by services, it is hopeless to try to allocate such items on a strict accounting basis. Use of the value test in this instance allows sufficiently large fees to maintain what services are necessary. Where costs can be traced, as research done for particular units in certain areas and during certain periods of time, specific allocation should be used. The percentage charge of gross revenues permits the stronger operating companies to carry the larger parts of such costs. This device follows taxation precedents in compelling all to contribute to a common enterprise in proportion to ability to pay.

It may be concluded that management fees should be treated in orthodox regulatory fashion. The backbone of regulation is the cost test, supported by market comparisons, and enlarged in this case by theoretical value analysis on the supposition that holding company services are worth what operating companies would lose were outside management not available. Regard must be had to the facts, and management companies, technically private in character, are brought under partial regulation through state control of operating company expenses in ways outlined in this paper.

DEPARTMENTS

The departments of the JOURNAL are edited specifically with regard to their interest to the readers who are especially concerned with the economic problems of land and public utilities. For the most part the material for the departments will be prepared by members of the staff of the Institute for Research in Land Economics and Public Utilities.

SUMMARIES OF RESEARCH

In this department are given brief accounts of investigations in progress and statements of tentative conclusions reached in the course of work by the staff of the Institute and others associated with the Institute's work.

COMMENTS ON LEGISLATION AND COURT DECISIONS

Here the readers of the JOURNAL will find a miscellany of summaries and interpretations of recent legislation, court decisions, and documents that have economic significance in land and public utility problems.

BOOK REVIEWS

This department contains critical reviews and brief notices of books in land economics and public utilities.

SUMMARIES OF RESEARCH

PUBLIC UTILITY FINANCING THROUGH AUGUST, 1930

ATTENTION is called to several aspects of public utility financing in recent months: (1) recession in volume of public utility financing during June, July, and August; (2) continued leadership of the present year to date in the volume of financing; (3) continued importance of utility financing which constitutes almost ½ of the total corporate financing to date; (4) comparatively greater importance of short-term financing than for any year since 1920; (5) slightly lower price for debt capital, with operating companies improving their position in comparison with the holding group.

Volume of New Issues

The current year still ranks significantly ahead of previous years in volume of public utility financing (Table I).[1]

In spite of very noticeable decreases in June, July, and August (compared with the record earlier months in 1930) a total of $4,600,000,000 of new public

[1] Cf. also "Public Utility Financing Through May, 1930", 6 *Journal of Land & Public Utility Economics* 312–315 (May, 1930).

TABLE I. INDEX NUMBER OF VOLUME OF PUBLIC UTILITY FINANCING, 1919–1930*

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
By Months												
January	100	67	55	46	122	112	199	173	259	176	169	412
February	48	28	25	47	66	89	172	125	314	220	248	144
March	25	27	25	43	94	78	144	115	158	190	268	191
April	5	38	25	50	64	112	69	182	165	318	107	110
May	15	38	35	150	66	233	103	230	214	203	287	506
June	26	20	9	96	92	122	118	181	130	317	109	144
July	41	25	115	44	21	104	90	177	97	48	276	196
August	20	11	33	22	40	62	93	58	92	82	94	40
September	54	44	34	147	34	77	110	38	168	169	319	...
October	24	33	33	77	59	112	92	123	261	180	86	...
November	8	21	119	43	161	69	102	136	212	127	22	...
December	20	63	53	54	135	111	153	114	433	167	126	...
By Quarters												
1st quarter	100	71	61	80	164	162	299	240	424	340	398	435
2nd quarter	27	56	41	172	129	271	168	344	295	487	292	442
3rd quarter	67	47	105	123	55	141	170	159	207	178	400	...
4th quarter	30	68	119	101	206	169	201	217	528	275	99	...
By Years	100	107	145	212	246	330	373	427	647	570	528	...

*Volume for January, 1919; first quarter, 1919; and year 1919 used as a basis for computing index numbers for months, quarters, and years respectively. Compiled from the monthly record of new capital flotations of the *Commercial and Financial Chronicle*.

In connection with these volume figures of public utility financing it should be noted, that:

1. All industrial types of utilities (except steam railroads) are included.
2. Foreign companies offering securities in the United States are included.
3. The volume figures through 1929 are the *Chronicle* figures before the revision made in January, 1930. Beginning this year the *Chronicle* separates "Investment Trust, Trading and Holding Companies (not Primarily Controlling)." Prior to this time such issues had been included partly in the "Public Utility" total and partly in the "Miscellaneous" group. The *Chronicle*, at the same time, revised its totals of public utility financing for the corresponding month of the five preceding years. We have here used the unrevised figures prior to 1930.

It might be suggested that the volume figures for 1930 are not comparable with those of the preceding years. One practical difficulty precludes the possibility of revising the total before 1929 to agree with 1930. That difficulty is the fact that the *Chronicle* figures for the previous *five* years only are revised, and this revision is made monthly. The only comparison which could be attempted at present would be to make the January and February totals for 1926 through 1930 comparable, but they would then not be comparable with other months in the same years, nor with earlier years.

In the analysis of these utility financing figures the foreign issues have been eliminated. What appear to be non-controlling investment companies have also been excluded; holding and operating company issues have been segregated (Table V).

utility issues were offered in the first eight months of 1930. Comparison of the average volumes of the first eight months of each year (Table II) shows 1930 well

TABLE II. VOLUME OF PUBLIC UTILITY FINANCING

First Eight Months of	Average of Eight Monthly Index Numbers
1930	218
1929	195
1928	194
1927	179
1926	155
1925	124
1924	114
1923	71
1922	62
1921	40
1920	32
1919	35

in the lead, with current figures exceeding those of 1929 (the closest competitor) by about 12%.

The volume for the first two quarters was likewise larger than for the corresponding period in any previous year, but public utility financing fell off very noticeably in July and August. The latter month, with a total of some $48,000,000, is among the lowest months for a number of years. However, since a third-quarter slump is usual, this year's July-August total of financing is exceeded only by the corresponding period in 1929.

TABLE III. PERCENTAGE OF PUBLIC UTILITY FINANCING IN TOTAL CORPORATE FINANCING

Year	Percentage
1919	16.87%
1920	16.75
1921	28.07
1922	31.90
1923	35.21
1924	39.85
1925	36.41
1926	37.26
1927	40.90
1928	33.97
1929	24.34
1930	
1st quarter	48.40
2nd quarter	42.80
1st six months	45.41
1st eight months	45.45

Utility and Corporate Financing

The public utility issues constituted almost ½ of the corporate financing for the first eight months of 1930 (Table III). This percentage (45.45) is above that for any year, the closest approximation being 1927 when about 41% of the corporate financing was done by utilities.

Type of Issue

During July and August of 1930 an increasingly larger percentage of public utility financing was done by means of issues maturing within five years (Table IV). During the first six months about one-tenth (9.1%) of the financing was short-term, compared with July and August percentages of 24.9 and 14.3 respectively. As a result, short-term

TABLE IV. PERCENTAGE OF STOCK, LONG-TERM DEBT, AND SHORT-TERM DEBT IN PUBLIC UTILITY FINANCING,* 1919–1930.

Period	Stock	Debt	Long-Term Debt	Short-Term Debt
1919	7.8%	92.2%	37.6%	54.6%
1920	12.1	87.9	43.9	44.0
1921	18.7	81.3	70.5	10.8
1922	30.8	69.2	64.5	4.7
1923	23.0	77.0	71.3	5.7
1924	34.1	65.9	57.5	8.4
1925	31.8	68.2	59.5	8.7
1926	24.7	75.3	69.9	5.4
1927	28.5	71.5	66.8	4.7
1928	37.2	62.8	57.7	5.1
1929	58.7	41.3	37.6	3.7
1st quarter	58.1	41.9	40.4	1.5
2nd quarter	40.6	59.4	52.7	6.7
3rd quarter	78.6	21.4	18.1	3.3
1st 3 quarters	60.9	39.1	35.5	3.6
4th quarter	34.2	65.8	60.8	5.0
1930				
January	17.8	82.2	72.6	9.6
February	26.5	73.5	68.6	4.9
March	36.4	63.6	59.2	4.4
1st quarter	25.6	74.4	64.7	9.7
April	33.9	66.1	61.5	4.6
May	54.2	45.8	45.3	0.5
June	35.7	64.3	18.7	45.6
2nd quarter	50.2	49.8	41.3	8.5
1st 6 months	39.1	60.9	51.8	9.1
July	2.3	97.7	72.8	24.9
August	43.8	56.2	41.9	14.3
1st 8 months	34.7	65.3	54.2	11.1

*Computed from summary of government and corporate financing, *Commercial and Financial Chronicle*. Foreign and investment trust issues eliminated.

financing is 11.1% of the year's total to date. This increased significance of short-term financing during July and August parallelled a noticeable decrease in the volume of public utility issues.

At the same time stock issues increased from about ¼ of the volume in the first three months to about ½ in the second quarter; and the relative volume of short-term issues remaining fairly constant, the result was a decline from 65% to 41% in long-term financing. During July and August, stock issues fell off; long-term financing became more important.

Briefly, stock financing to date this year is more significant than for any year except 1928 and 1929; and compares very closely with the last quarter of 1929. Not since 1920 have short-term issues been so significant, over a considerable period of time, as they have been thus far in 1930.

TABLE V. WEIGHTED AND SIMPLE AVERAGE YIELD AT OFFERING PRICE OF NEW ISSUES OF DEBT OBLIGATIONS OF PUBLIC UTILTIES, BY HOLDING AND BY OPERATING COMPANY GROUPS.

Year	Weighted Average Yield			Simple Average Yield		
	All Issues	Operating	Holding	All Issues	Operating	Holding
1919	6.57	6.53	6.67	6.68	6.63	6.89
1920	7.43	7.40	7.63	7.62	7.58	7.95
1921	7.14	7.09	8.15	7.50	7.46	8.05
1922	6.08	5.99	6.68	6.32	6.26	6.83
1923	5.99	5.92	6.58	6.30	6.27	6.56
1924	5.97	5.86	6.50	6.13	6.08	6.40
1925	5.59	5.48	5.78	5.83	5.77	6.09
1926	5.52	5.38	5.90	5.70	5.64	5.90
1927	5.22	5.13	5.38	5.58	5.50	5.80
1928	5.26	5.09	5.39	5.58	5.41	5.79
1929	5.35	5.08	5.75	5.95	5.73	6.25
1st quarter	5.47	5.50	5.46	5.89	5.83	5.96
2nd quarter	5.00	4.82	5.99	5.97	5.83	6.19
3rd quarter	5.86	5.57	6.08	6.20	5.53	6.56
4th quarter	5.40	5.19	6.53	5.84	5.56	6.45
1930						
January	5.30	5.12	5.67	5.53	5.45	5.69
February	5.58	5.50	6.44	5.83	5.71	6.44
March	5.81	5.64	5.87	5.72	5.55	5.88
1st quarter	5.42	5.24	5.77	5.70	5.59	5.91
April	5.31	5.26	6.45	5.74	5.69	6.45
May	5.19	5.21	5.18	5.51	5.44	5.66
June	5.59	5.38	5.67	5.65	5.40	6.04
2nd quarter	5.29	5.25	5.31	5.62	5.53	5.88
1st 6 months	5.36	5.24	5.50	5.66	5.56	5.90
July	5.15	4.99	5.57	5.34	5.18	6.01
August	5.49	5.00	6.66	5.87	5.00	6.44
1st 8 months	5.32	5.18	5.52	5.62	5.48	5.96

Price of Debt Capital

No great change is apparent in the price of debt capital, as measured by the price at which securities are offered to the investor (Table V). The simple average yield of all debt issues for the first eight months of 1930 is 5.62%; for the first six months 5.66%. The weighted average yield showed little change, 5.36% for six months, 5.32% for eight months. The weighted average yield remains consistently below the simple average yield (for all types of issues), suggesting a lower price for the capital raised by means of larger issues.

Comparison of the simple average yields of operating and of holding company issues shows a margin in favor of the operating companies (Table VI).

TABLE VI. EXCESS OF SIMPLE AVERAGE YIELD OF HOLDING COMPANY ISSUES OVER OPERATING COMPANY ISSUES

Period	Excess of Holding Company Yields
1929	.52
1st quarter	.13
2nd quarter	.36
3rd quarter	1.03
4th quarter	.89
1930	
1st quarter	.32
2nd quarter	.35
1st six months	.34
July	.83
August	1.44
1st 8 months	.48

Judging from their issue-yields, holding companies were in a much less favorable borrowing position during July and August than were operating companies. However, the period is too short to support any generalization as to the reason for this situation.

ROY L. REIERSON.

COMMENTS ON LEGISLATION AND COURT DECISIONS

PUBLIC UTILITY LEGISLATION DURING 1930

THOUGH even-numbered years are likely to be rather barren of public utility legislation with only nine legislatures[1] meeting regularly, the lawmakers of two states—New York and Massachusetts—acted on matters of more than passing significance. Special legislative sessions were called in 12 states,[2] but the problems of public utility regulation received little or no attention.[3]

Undoubtedly the most significant group of laws relating to public utility regulation during 1930 was adopted by the New York Legislature. It will be recalled that special investigating committees were created by both the New York[4] and the Massachusetts[5] legislatures during 1929 to make a critical survey of certain aspects of existing public utility laws. The work of the Massachusetts Legislative Commission was limited to problems relating to holding companies and municipal plants; the special New York Commission exhaustively covered every phase of state regulation. Following recommendations of this Commission, the New York Legislature enacted laws affecting two of the nightmares of state regulation—holding companies,[6] and federal judicial interference[7] with state regulation. The statutes for control of holding companies[8] provide that both the Transit and the Public Service Commissions shall have jurisdiction over holders of the voting capital stock of all public utility companies under the jurisdiction of the commissions. The purpose is to enable the commissions to require the disclosure of the owners of such securities. In addition, the Commission is given jurisdiction[9] over affiliated interests having transactions with utilities to the extent of access to accounts and records and to require reports. Management, construction, and engineering contracts must be filed with the Commission, which may reject such agreements.[10] The Commission is also given greater powers to require the filing of additional information by such affiliated companies.[11] The limitations of this legislation were pointed out by Chairman Maltbie in a recent opinion.[12]

[1] Kentucky, Louisiana, Massachusetts, Mississippi, New Jersey, New York, Rhode Island, South Carolina, Virginia.

[2] Idaho, Illinois, Kansas, Louisiana, Maine, Maryland, Nebraska, New Hampshire, New Jersey, Texas, Utah, West Virginia.

[3] Texas was the only state of this group to adopt laws affecting public utilities. See *infra*, pp. 376ff.

[4] New York, Laws 1929, C. 673. See also *Report* of the Commission on Revision of the Public Service Commission Law, Leg. Doc. No. 75, and John D. Sumner's "New York State Studies Regulation," *6 Journal of Land & Public Utility Economics* 258–269, 376–385 (August and November, 1930).

[5] Massachusetts, Acts 1929, Resolve 55; see also *Report* of the Special Commission on Control and Conduct of Public Utilities, H. D. No. 1200 (1930).

[6] New York Laws 1930, C. 760, adding Secs. 110 to P. S. L.

[7] *Ibid.*, C. 776, adding sec. 112.

[8] *Ibid.*, C. 760, adding sec. 110 to P. S. L.

[9] *Ibid.*, sec. 110.

[10] *Ibid.*, (3).

[11] *Ibid.*, C. 761 ,adding sec. 111 to P. S. L.

[12] The transfer of a coke oven gas plant by the Brooklyn Union Gas Co. to a newly organized coke company was involved in the case of *In re Brooklyn Union Gas Co.*, No. 5601, N. Y. P. S. C., July 15, 1930. Petitioning counsel contended that C. 760, L. 1930, extended the control of the Commission to the purchaser, a non-utility. This suggestion was rejected by Chairman Maltbie, saying: "We do not attach any great importance to this suggestion. In the first place, the Act to

(Footnote 12 continued on page 432)

The judicial enforcement act[13] is designed to prevent Federal Court interference with state regulation. By this, New York has become the first state to avail itself of section 266 of the Judicial Code. Briefly, it provides that whenever suit is instituted in the federal district courts for an interlocutory injunction to enjoin the enforcement of rate orders of either Commission, the Commission may institute proceedings in the Appellate Division of the Supreme Court to restrain the utility from charging rates in excess of such order before final hearing of the pending proceedings in the Federal Court. The Appellate Division is to grant a stay of the Commission order until a decision has been rendered by the state courts. Notice of such state court proceedings is then to be forwarded immediately to the Federal District Court. All Federal Court proceedings are, according to section 266, to be stayed pending final determination of such state court action. The Commission is obligated to prosecute the action with diligence and good faith.

Utilities filing schedules containing increased rates may be required to refund payments received in excess of rates finally receiving Commission approval under the provisions of another act.[14] Telephone companies of a property value of $10,000 and over are now subject to the jurisdiction of the Commission.[15] Jurisdiction over accounts was extended to enable the Commission to suspend particular charges or credits pending submission of proof by a utility.[16] Utilities desiring to acquire securities of other companies have now the burden of proving such acquisition to be in the public interest;[17] the Commission has also been given jurisdiction over issue of re-acquired securities by utilities.[18] Two administrative changes were provided by the creation of a Bureau of Valuation and Research,[19] and a Rural Electrification Expert.[20]

The Massachusetts General Court was guided by the *Report* of the Special Commission on Control and Conduct of Public Utilities. Due to its suggestion, the Department[20a] was given power to examine the books and records, contracts and physical property of affiliated companies. The term "affiliated company" was defined to include "any corporation, society, trust, association, partnership or individual" (a) controlling either directly or indirectly companies subject to Chapter 164, by stock ownership, or (b) affiliated companies controlled either directly or indirectly by companies subject to Chapter 164, or (c) standing in such relation that there is an absence of equal bargaining power in respect to dealings and transactions. Contracts between affiliated companies and gas and electric utilities in excess of two years providing for compensation for services rendered by an affiliated company are

(Footnote 12 continued from page 431)
which counsel refers gives limited jurisdiction to the Commission over holding companies—jurisdiction which would be entirely inadequate to deal with the present situation and which by no means gives to the Commission the same jurisdiction over the Coke Oven Company that it now has over the Gas Company. In the second place, if approval of the Commission is not necessary to validate the operating contract between the Gas Company and the Coke Oven Company, as counsel contends, it follows that this contract could be changed at any time, eliminated entirely or even assigned to another company entirely beyond any limited control provided for by recent legislation."

[13] New York, Laws 1930, C. 776, adding sec. 112.

[14] *Ibid.*, C. 790, adding sec. 113 to P. S. L.

[15] *Ibid.*, C. 829, amending sec. 2, subd. 17; see also sec. 95 (3) providing for a simplified system of accounts for such utilities.

[16] *Ibid.*, C. 779, amending sec. 52 of P. S. L.

[17] *Ibid.*, C. 778, amending sec. 54; C. 786, amending sec. 70; C. 787, amending sec. 83.

[18] *Ibid.*, C. 781, amending sec. 55; C. 783, amending sec. 82; C. 780, amending sec. 69.

[19] *Ibid.*, C. 850.

[20] *Ibid.*, C. 865, amending sec. 8 of P. S. L.

[20a] Massachusetts, Acts 1930, C. 395, amending sec. 85, C. 164.

made subject to the approval of the Department, which may determine the reasonableness of the compensation and disapprove such agreements.[21] By another act,[22] the Department, upon written petition, may require the supply of gas or electricity in bulk. The provisions relating to jurisdiction of the Commission over supply contracts were amended[23] to include supply contracts of gas as well as electric companies. By this amendment the Commission has jurisdiction over contracts in excess of two years instead of three years. Sales of municipal gas and electric plants were made subject to approval of the Department.[24] The only administrative change[25] resulted in the creation of a Division of Smoke Inspection within the Department, shouldering the responsibility of alleviating the smoke nuisance.

A complete revision was made of the provisions of the Massachusetts railroad law[26] relating to the elimination of highway and railroad crossings. The new law is patterned after the existing New York Highway Crossing Elimination Laws.[26a] The chapter now provides that the Department of Public Works is to prepare an annual list of crossings to be eliminated, to be submitted to the Department of Public Utilities which shall establish a program. The engineering, construction, and supervisory duties are imposed upon the Department of Public Works; the function of the Department of Public Utilities is appellate in nature. Its approval is required for all orders involving the location and relocation of tracks and facilities of railroads, street railways, electric, telephone and telegraph utilities. One-half of the expense is imposed upon railroads, 40% upon the Commonwealth, the remainder is apportioned by the Department of Public Works against the city or county involved. In addition, contracts between municipalities and railroads for the elimination or alteration of crossings are to be exempt from provisions of the new act.

The New Jersey Legislature adopted no bills of outstanding importance during the year. The Highway Crossing Act was amended[27] and the Public Utilities Act was clarified to relieve the necessity for Commission approval of conveyances of lands by public utilities or political subdivisions for public use, or condemnation of lands for public use by political subdivisions.[28] The Legislature enacted an elaborate act[29] giving the Commission jurisdiction over radio broadcasting stations. The act provides for the issuance of certificates of convenience and necessity, hearings by the Commission, which may require construction of stations within a specific period; exemption of existing and municipal stations subject to the jurisdiction of the Federal Radio Commission.

Three acts relating to motor carriers were adopted during the year by the

[21] *Ibid.*, C. 396, adding sec. 94B to C. 164 Gen. Laws of 1921.

[22] *Ibid.*, C. 383, adding sec. 92A to C. 164 of Gen. Laws of 1921.

[23] *Ibid.*, C. 342, amending sec. 94A to C. 164 of Gen. Laws of 1921. An error seems to have been made in this amendment since the last sentence of the section now provides that contracts in excess of one year not approved are to be null and void while the first part of the section provides that the Commission is to approve contracts in excess of two years.

[24] *Ibid.*, C. 369, amending sec. 68, C. 164 of Gen. Laws of 1921.

[25] *Ibid.*, C. 380, adding secs. 12C-12F to C. 25, Gen. Laws of 1921.

[26] Massachusetts G. L. 1921, C. 159, secs. 65-81, repealed and re-enacted Acts 1930, C. 417.

[26a] *Ibid.*, L. 1928, C. 678, C. 677, C. 679.

[27] New Jersey, Public Laws 1930, C. 101, amending P. L. 1913.

[28] *Ibid.*, C. 35, amending sec. 18 (8) of the act creating a Board of Public Utility Commissioners.

[29] *Ibid.*, C. 15. For two decisions by the New Jersey Board of Commissioners, licensing radio broadcasting stations, see *In re Atlantic Broadcasting Corporation*, September 17, 1930; and *In re American Radio Men's Corporation*, September 17, 1930.

Kentucky Legislature. The first[30] completely revises the motor carrier act. The second[31] provides for license fees of motor carriers, the third[32] requires motor carriers operating within municipalities to file indemnity bonds. The State Highway Commission was given authority to regulate bridges and ferries.[33] This authority includes that of issuing certificates of convenience and necessity to these companies; regulation of rates of fare, and tolls; safety; and the payment of license fees. Initial franchise and charter limitations imposed upon railroads were relieved by another act[34] stipulating that railroads that have been granted charters for a limited period of years shall possess and exercise all privileges and powers without regard to or despite any limitations of time in such grant. A referendum is now necessary for the sale, mortgage, or lease of all municipal gas, water, or electric systems[35] by cities of the fourth, fifth, or sixth class.

Virginia enacted two laws affecting the operations of motor carriers during 1930. One[36] provides for the separation of white and colored races in motor carriers by the designation of seats to be occupied by members of each race. The validity of section 4 of this act may be challenged since it makes operators in charge of the vehicles special policemen with general powers as conservators of the peace to enforce its provisions. The other act[37] provides for a revision and addition to the Commission's powers over motor carriers engaged in the transportation of persons and property. Among the miscellaneous acts adopted by the Legislature is included an amendment[38] of section 4033 of the Code, giving the Corporation Commission power to relieve express companies of their obligations to receive and deliver goods and merchandise at all railroad stations. Another[39] provides for districts with power to construct and operate water, sewerage, heat, light, power, and gas systems. Two acts relate to highway crossings,[40] another act creates a Potomac River Commission to investigate hydro-electric power,[41] and two laws refer to aircraft.[42]

The South Carolina Legislature conferred upon the Railroad Commission authority to order motor carriers to establish stations in cities of 2,000 or more.[43] The jurisdiction of the Commission was also increased to require reports from all public utilities subject to its jurisdiction.[44] The provisions relating to the sale of municipal plants were amended and, upon sale, municipalities may grant exclusive franchises for a period not exceeding 30 years.[45] In addition, license fees of motor carriers were increased,[46] and the act relating to the jurisdiction of the Railroad Commission over motor carriers was amended.[47] Another law provides for the licensing of aircraft.[48]

The Rhode Island Legislature conferred upon the Public Utilities Commission power to regulate the issue of certificates of convenience and necessity to taxicabs.[49]

Petroleum and storage companies were added to the list of utilities subject to the

[30] Kentucky, Acts 1930, C. 166.
[31] *Ibid.*, C. 75.
[32] *Ibid.*, C. 78.
[33] *Ibid.*, C. 158.
[34] *Ibid.*, C. 182.
[35] *Ibid.*, C. 103.
[36] Virginia, Acts 1930, H. B. 264.
[37] *Ibid.*, S. B. 304.
[38] *Ibid.*, C. 286.
[39] *Ibid.*, S. B. 272.
[40] *Ibid.*, S. B. 115, 256.
[41] *Ibid.*, H. B. 9.
[42] *Ibid.*, S. B. 313, H. B. 192.
[43] South Carolina, Acts 1930, S. B. 974.
[44] *Ibid.*, S. B. 1225.
[45] *Ibid.*, S. B. 1280, amending Acts 1927, No. 91.
[46] *Ibid.*, H. B. 1457.
[47] *Ibid.*, S. B. 1155, 1237.
[48] *Ibid.*, S. B. 1082.
[49] Rhode Island, Acts 1930, H. B. 844.

regulation of the Texas Commission.[50] This act, comprehensive in character, declares such companies to be utilities, prohibits discrimination, requires the filing of bonds, and permits the Commission to establish rates and rules governing services and facilities. The Commission may require these companies to extend their pipe lines or enlarge their storage facilities. Companies engaged in the business of purchasing petroleum and affiliated with storage companies are also made subject to control by the Commission. Another act[51] enables the Commission or contending parties to present the testimony of witnesses by depositions in lieu of personal testimony.

HARRY R. BOOTH.

[50] G. L. 1930, C. 36, Fifth Called Session.
[51] G. L. 1930, C. 43, Fifth Called Session.

BOOK REVIEWS

Malott, E. Orth. Forces Affecting Municipally Owned Electric Plants in Wisconsin. *Chicago: Institute for Research in Land Economics and Public Utilities, 1929. pp. vii, 101. $1.50.*

The author of this monograph seeks to present objectively information about municipal electric plants in Wisconsin. An intensive study of all such plants in this one state was undertaken in preference to a more superficial study in several states. The author states that he wishes to avoid implicating himself in the "semi-logical and emotional arguments about municipal ownership." Rather, he proposes to present the facts and let the reader arrive at his own conclusions. Comparison of public and private ownership is not his primary purpose, since comparable private utilities were not given sufficient study.

Dr. Malott not only shuns comparison of municipal and private plants but warns against the use of his findings as a test of the principles of public ownership as a policy since "only one municipal plant in Wisconsin was in a city as large as 17,000 in 1920 and 93.1% were in cities and villages under 5,000 in population; and probably the economic size necessary for self-sufficiency of an electric light and power plant or system is around 25,000 population." (p. 3.) It appears that the results of an investigation of municipal electric plants which proposes neither a comparison with private plants nor such a presentation of facts as will make possible an appraisal of public ownership is very limited at the start.

Recognizing that municipal ownership can develop only within the legal and financial limits set for it by the courts and the legislature, Dr. Malott has reviewed the development of the law governing the undertaking and operation of municipal electric plants. The legal right of a municipality to operate an electric plant is and has for many years been clear. A municipality may sell current as a public utility beyond its corporate limits.

The recent integration of electric utilities into regional systems has placed the municipal plants at an operating disadvantage and almost precludes extensive further development by isolated communities. Possible future development by many communities associated in a power district awaits the proper enabling legislation by the legislature.

For a long time the municipalities have felt a financial restraint in that bonds for revenue-producing property were lumped with bonds for other property under the constitutional 5% debt limit. Dr. Malott observes that this handicap is now removed in that utilities may be financed without the restriction of the debt limit. This is true only of the original or purchased plant, however, and not of the improvements to the plant which may be made later. This peculiar interpretation by the State Supreme Court has made the exemption statute of doubtful significance.

Dr. Malott reviews also the regulation of municipal plants by the Railroad Commission. He finds that the Commission has had considerable difficulty in securing adequate reports from small municipal plants and has not always been successful in securing proper accounting treatment of joint costs, and separation of capital and revenue charges. In the matter of rate structures the municipalities have been slow to recognize the value of promotional rates.

The difficulties encountered by the Commission in its relations with municipal plants have been primarily the difficulties which it encountered with small plants in general. The Commission has been a help to these plants in that its advice gave something of the advantages which a management company might furnish. Dr. Malott does not generalize about the management of municipal plants save to say that in no case was there evidence of any fraud or corruption. Some plants showed progressive and able management, while some, particularly in the small communities where part-time labor and supervision were relied on, were operated by untrained and not very systematic officials.

While Dr. Malott stated that comparison with private plants was not his primary aim, that part of the monograph which seems most important to the reviewer presents a comparison of the "numerical experience" of municipal plants with private plants of similar size. Dr. Malott has given a clear statistical proof that what has been called "the rise and decline of municipal ownership in Wisconsin" should have been called the "rise and decline of the small independent utility plant in Wisconsin." By population groups and by types of generating plants, he has noted the number of plants originating in various periods and the number of municipal plants changing from generating to purchasing and from public to private ownership. Comparable data were gathered for private plants. The findings, in brief, are these:

"Many of the small municipal plants originated in isolated communities where private capital would not go, and where public operation was but a temporary expedient.

". . . small generating establishments, municipal and private, in a region of interconnection, are becoming purchasing plants or a distributing area for an interconnected private system. A purchasing plant is often just an intermediate stage in integration. This conclusion applies in general to small establishments regardless of type of ownership. (p. 46.)

". . . technological development has been a controlling factor in the decrease in the number of small plants. Since more municipal plants are small plants, the decrease of the number of municipal plants in any given area appears largely attributable to this cause." (p. 68.)

These negative findings should effectively prevent use of the fact of transfers of small municipal plants to large power corporations as evidence of a failure of municipal ownership. A series of case studies of the larger municipal utilities in Wisconsin to show their profitableness, as well as a comparison of rates with those of private utilities, would give valuable supplementary information.

Dr. Malott's review of the development of the law governing municipal ownership, though brief, is carefully done and is interesting from the historical side. For his study of what he calls the "numerical experience" of municipal and private plants we are indebted to him. The remainder of the study does not appear significant. The criticism is not so much of the manner in which the investigation was made within the limits set, but of the limits themselves.

The reviewer would like to know from a study of municipal utility operation how this type of ownership compares with private ownership in respect to what it offers to consumers and taxpayers. That means a comparison of rates and a study of profitableness. He is willing to confess that he has no interest in the operating ratios of municipalities as such, but only as these throw light upon a social problem now before us, i.e., should we depend upon regulation of public utilities or should they be publicly owned?

Such an attitude may in the eyes of some be unacceptable to the cult of scientific investigation. However, to

the reviewer, being scientific does not imply an absence of interest in the result. The scientific procedure requires that the investigator be honest and fair and as free as is humanly possible from preconceived prejudices. He may have definitely in view as a purpose a determination of which of two economic institutions is most satisfactory for a particular group or for several groups within the community. If such is his aim and he makes an investigation in an unbiased fashion, his prestige should in no way be endangered by the fact that he states one or the other of these institutions to be, in his opinion, most in accord with the interest of the group or groups concerned.

Dr. Malott has included all municipal plants in his study, although most of them were operating in markets too small to permit economic operation. Many were in communities which were forced to construct plants in order to have any lighting service at all, since private capital would not take the risk. They were in the nature of pioneer utilities, made technologically obsolete with the entry of long-distance transmission. Dr. Malott quite properly points out that a study of such plants reveals characteristics of small electric plants whether public or private rather than municipal utilities as such.

At a time when more than 80% of the electric, gas, street railway, and heating utility property in Wisconsin is controlled by 13 large utility corporations, and when more than 70% of it is controlled by three holding company groups, the significance of a study of that amount controlled by small municipalities and private companies cannot be great. A study of municipal plants as such might indicate to some extent the possibilities of public ownership in general, but a study of the small plant as such, when it is technologically obsolete, must be of minor importance.

Space does not permit a detailed discussion of the examples of mistaken policy or inability which Dr. Malott presents. The reviewer would like to quote, beside a badly misspelled letter from a municipal official to the Railroad Commission, a nicely written letter from the secretary and treasurer of a large utility, and note that a polished gentleman can keep his company's accounts just as badly as an uneducated municipal employee in a small northern Wisconsin community. He would also like to note beside the discussion of the refusal of the Railroad Commission to allow the Kaukauna electric department to subsidize the water department, that the Commission has allowed and continues to allow the Milwaukee electric utility to subsidize the railway utility owned by the same company. Such additional examples might serve to prevent any inference that municipalities alone give such difficulties.

Dr. Malott notes that in 1927 the city of Kewaunee had no regular bookkeeper, although its revenues totalled $38,466.52. He adds that "a private business with as large an investment would probably not consider it waste to hire a properly trained clerk and to furnish him all equipment necessary to keep a clear record of the operation of the business." (p. 30.) Dr. Malott stated to begin with that he has made no study of privately owned utilities in Wisconsin. Without suggesting that in view of this fact the above quote might be considered "semi-logical and emotional" (p. 1), the reviewer would like to call attention to the fact that, although private utilities do as a rule employ plenty of clerks, most of the large Wisconsin utilities do not classify their property by prescribed accounts,

but lump it together in one undistributed account. This does not furnish an exactly clear record.

The inference in Dr. Malott's monograph, for the reviewer, is that his findings apply to the municipal plants studied and probably to all small plants public or private, but not to large operating units. By such a discussion as just suggested it might be shown that many of his findings as to accounting and policy apply likewise to certain large super-power companies whose expert control has been somewhat overstressed.

F. A. STATEN

Davis, Joseph Stancliffe THE FARM EXPORT DEBENTURE PLAN. *Palo Alto, California: Food Research Institute of Stanford University, 1929. pp. x, 274. $3.00.*

This book is an outstanding contribution to the literature on proposals for farm relief through legislation. The author is a director of the Food Research Institute, and at present is on leave and is chief economist for the Federal Farm Board. The approach to and the treatment of the subject are scientific and careful; the exposition is clear and convincing.

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Foreign experience with similar proposals is discussed and the conclusion reached that there is little in these experiences to indicate that the proposed plan would prove successful. Attention is called to the possibility of international complications resulting from the adoption of such a plan and the probability of retaliatory measures.

The author's final conclusions are "the plan would fail in practice to yield the promised advantages," and "at best it could not be expected to yield more than a portion, and probably only a small fraction, of the gross benefits that are claimed for it, and this at a heavy cost to the Treasury and at the risk of numerous complications, both domestic and international, as well."

W. E. GRIMES

BOOK NOTICES

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to what constitutes a reasonable charge, and the effect upon demurrage charges of the interstate law regarding discrimination. In

ties were not given sufficient study.

Dr. Malott not only shuns comparison of municipal and private plants but warns against the use of his findings as a test of the principles of public ownership as a policy since "only one municipal plant in Wisconsin was in a city as large as 17,000 in 1920 and 93.1% were in cities and villages under 5,000 in population; and probably the economic size necessary for self-sufficiency of an electric light and power plant or system is around 25,000 population." (p. 3.) It appears that the results of an investigation of municipal electric plants which proposes neither a comparison with private plants nor such a presentation of facts as will make possible an appraisal of public ownership is very limited at the start.

Recognizing that municipal ownership can develop only within the legal and financial limits set for it by the courts and the legislature, Dr. Malott

were lumped with bonds for other property under the constitutional 5% debt limit. Dr. Malott observes that this handicap is now removed in that utilities may be financed without the restriction of the debt limit. This is true only of the original or purchased plant, however, and not of the improvements to the plant which may be made later. This peculiar interpretation by the State Supreme Court has made the exemption statute of doubtful significance.

Dr. Malott reviews also the regulation of municipal plants by the Railroad Commission. He finds that the Commission has had considerable difficulty in securing adequate reports from small municipal plants and has not always been successful in securing proper accounting treatment of joint costs, and separation of capital and revenue charges. In the matter of rate structures the municipalities have been slow to recognize the value of promotional rates.

Valuable appendices are attached, including a glossary of terms (an excellent feature), the code of storage rules, tables of cases cited, conference rulings on demurrage, car record forms, and the portions of the Interstate Commerce Act and Elkins Act dealing with demurrage. There is also an index.

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HERBERT E. DOUGALL.

Joint Committee on Uses of Sound Land Policy. WHAT ABOUT THE YEAR 2000? [illegible]

value or some form of index numbers, but since a greater supply causes a lower value, these figures must be read backward as indicators of the amount of land." Does this mean that if the total money value of all the land in the United States is larger this year than last year, the "economic supply of land" or "the amount of land" has decreased? If so, the accuracy of the statement is certainly open to question. Or, it may prove difficult to defend the statement if it refers to changes in the money values of individual tracts of land, owing to neglect of the demand factors which may be equally as important as supply factors in causing changes in prices. This difficulty arises in connection with the problem of attempting to find a measurement of the economic supply of land other than the unsatisfactory acre unit. It is doubtful whether a statement such as is here commented upon will aid in finding the solution.

The population forecast is an interesting analysis, but these estimates will be true only to the extent that the same forces operate in the future as have operated in the past.

Other chapters deal with Recreation Areas, Urban Uses of Land, Forestry Uses of Land,

plants wi[illegible] private plants of similar size. Dr. [illegible]ott has given a clear statistical proo[illegible]at what has been called "the rise and decline of municipal ownership in Wisconsin" should have been called the "rise and decline of the small independent utility plant in Wisconsin." By population groups and by types of generating plants, he has noted the number of plants originating in various periods and the number of municipal plants changing from generating to purchasing and from public to private ownership. Comparable data were gathered for private plants. The findings, in brief, are these:

"Many of the small municipal plants originated in isolated communities where private capital would not go, and where public operation was but a temporary expedient.

". . . small generating establishments, municipal and private, in a region of interconnection, are becoming purchasing plants or a distributing area for an interconnected private system. A purchasing plant is often just an intermediate stage in integration. This

debted to him. The remainder of the study does not appear significant. The criticism is not so much of the manner in which the investigation was made within the limits set, but of the limits themselves.

The reviewer would like to know from a study of municipal utility operation how this type of ownership compares with private ownership in respect to what it offers to consumers and taxpayers. That means a comparison of rates and a study of profitableness. He is willing to confess that he has no interest in the operating ratios of municipalities as such, but only as these throw light upon a social problem now before us, i.e., should we depend upon regulation of public utilities or should they be publicly owned?

Such an attitude may in the eyes of some be unacceptable to the cult of scientific investigation. However, to

the reviewer, being scientific does not imply an absence of interest in the result. The scientific procedure requires that the investigator be honest and fair and as free as is humanly possible from preconceived prejudices. He may have definitely in view as a purpose a determination of which of two economic institutions is most satisfactory for a particular group or for several groups within the community. If such is his aim and he makes an investigation in an unbiased fashion, his prestige should in no way be endangered by the fact that he states one or the other of these institutions to be, in his opinion, most in accord with the interest of the group or groups concerned.

Dr. Malott has included all municipal plants in his study, although most of them were operating in markets too small to permit economic operation. Many were in communities which were forced to construct plants in order to have any lighting service at all, since private capital would not take the risk. They were in the nature of pioneer utilities, made technologically obsolete with the entry of long-distance transmission. Dr. Malott quite properly points out that a study of such plants reveals characteristics of small electric plants whether public or private rather than municipal utilities as such.

At a time when more than 80% of the electric, gas, street railway, and heating utility property in Wisconsin is controlled by 13 large utility corporations, and when more than 70% of it is controlled by three holding company groups, the significance of a study of that amount controlled by small municipalities and private companies cannot be great. A study of municipal plants as such might indicate to some extent the possibilities of public ownership in general, but a study of the small plant as such, when it is technologically obsolete, must be of minor importance.

Space does not permit a detailed discussion of the examples of mistaken policy or inability which Dr. Malott presents. The reviewer would like to quote, beside a badly misspelled letter from a municipal official to the Railroad Commission, a nicely written letter from the secretary and treasurer of a large utility, and note that a polished gentleman can keep his company's accounts just as badly as an uneducated municipal employee in a small northern Wisconsin community. He would also like to note beside the discussion of the refusal of the Railroad Commission to allow the Kaukauna electric department to subsidize the water department, that the Commission has allowed and continues to allow the Milwaukee electric utility to subsidize the railway utility owned by the same company. Such additional examples might serve to prevent any inference that municipalities alone give such difficulties.

Dr. Malott notes that in 1927 the city of Kewaunee had no regular bookkeeper, although its revenues totalled $38,466.52. He adds that "a private business with as large an investment would probably not consider it waste to hire a properly trained clerk and to furnish him all equipment necessary to keep a clear record of the operation of the business." (p. 30.) Dr. Malott stated to begin with that he has made no study of privately owned utilities in Wisconsin. Without suggesting that in view of this fact the above quote might be considered "semi-logical and emotional" (p. 1), the reviewer would like to call attention to the fact that, although private utilities do as a rule employ plenty of clerks, most of the large Wisconsin utilities do not classify their property by prescribed accounts,

but lump it together in one undistributed account. This does not furnish an exactly clear record.

The inference in Dr. Malott's monograph, for the reviewer, is that his findings apply to the municipal plants studied and probably to all small plants public or private, but not to large operating units. By such a discussion as just suggested it might be shown that many of his findings as to accounting and policy apply likewise to certain large super-power companies whose expert control has been somewhat overstressed.

F. A. Staten

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The forbidding title and legal-textbook style conceal a very complete and detailed description of the nature and legal interpretation of this highly controversial subject.

Demurrage is the charge made by carriers for the detention of a car for loading, unloading, or reconsignment beyond the "free time" (48 hours) allowed for such purpose by the published regulations. This charge is designed to compensate the carrier for its additional service of storage and also to act as a penalty to influence the shipper to unload promptly. The payment of a charge over and above the ordinary rate for hauling has naturally been the subject of much controversy, has afforded opportunities for discrimination, and has required a great deal of legal interpretation. Mr. Hartman's book does a great deal toward clearing up the confusion which has hitherto existed concerning the real nature and purpose of demurrage.

The author traces the history and nature of demurrage as stated by the courts, the degree of jurisdiction of the Interstate Commerce Commission; and discusses the necessity for uniformity of demurrage charges, the legal requirement of publication, the Interstate Commerce Commission rulings as to what constitutes a reasonable charge, and the effect upon demurrage charges of the interstate law regarding discrimination. In general, demurrage is a legitimate charge, whose reasonableness is subject to interstate control similar to that over railway tariffs.

The application of demurrage rules as interpreted by the courts and the Commission is described, showing the type of equipment and the parties subject to the charge, the point of assessment, methods of delivery, what constitutes "free time," etc.—all matters on which the law is now fairly well crystallized. The nature of shippers' complaints and defenses against railway demurrage charges, under varying circumstances; procedure of the Commission in investigating charges; reciprocal demurrage, or the penalty imposed by some state statutes upon the carrier for unreasonable delay, to be paid to the shipper, are considered at length. Since the growth of Interstate Commerce Commission control of all phases of interstate commerce the powers of the individual states in respect to the last have been greatly curtailed. Other charges against shippers, similar to demurrage, such as track storage; the application of the demurrage rule to short line carriers, and the effect of the "per diem" charge (rental paid by one railway for use of the cars of another) are additional items treated.

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HERBERT E. DOUGALL.

Joint Committee on Bases of Sound Land Policy. WHAT ABOUT THE YEAR 2000? *Harrisburg, Pa.: J. Horace McFarland Co., 1929. pp. xv, 162. $1.00.*

This is a summary of answers from the economic point of view to the questions: "Will our land area in the United States meet the demands of our future population?" and "How are we to determine the best use of our land resources?" The answers to these questions are found in an inventory of the land resources of the United States, a prediction of the future population of the country, a forecast of the land services required to meet the demands of this population, and a survey of the planning problems involved in promoting the maximum well-being of the present and future inhabitants of the country.

Chapter I called Land Resources appears to bear a misleading title. It consists of a brief inventory of the *surface* of the land in the United States with particular reference to the characteristics of crop land. This does not seem sufficiently inclusive to comprehend our land resources within the meaning generally attached to these terms by economists. For example, why neglect mineral and water resources? In this same chapter the statement is made: "The economic supply of land can be indicated by the money value or some form of index numbers, but since a greater supply causes a lower value, these figures must be read backward as indicators of the amount of land." Does this mean that if the total money value of all the land in the United States is larger this year than last year, the "economic supply of land" or "the amount of land" has decreased? If so, the accuracy of the statement is certainly open to question. Or, it may prove difficult to defend the statement if it refers to changes in the money values of individual tracts of land, owing to neglect of the demand factors which may be equally as important as supply factors in causing changes in prices. This difficulty arises in connection with the problem of attempting to find a measurement of the economic supply of land other than the unsatisfactory acre unit. It is doubtful whether a statement such as is here commented upon will aid in finding the solution.

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Other chapters deal with Recreation Areas, Urban Uses of Land, Forestry Uses of Land, Agricultural Uses of Land. The last two chapters point out the need for land planning on sectional and national as well as urban scales and indicate the progress made by various organizations in this direction.

The book is important as a non-technical summary of materials from many sources bearing on some of the problems involved in land utilization. It calls attention to the need for more study of the factors involved, but is rather vague as to concrete solutions. However, the emphasis upon the need for comprehensive, rational planning of land utilization is praiseworthy. It may be useful as a supplementary reference for courses in Land Economics.

A. D. THEOBALD

Killough, Hugh B. and Lucy W. RAW MATERIALS OF INDUSTRIALISM. *New York: Thomas Y. Crowell Co., 1929. pp. xix, 399. $3.75.*

Lippincott, Isaac. ECONOMIC RESOURCES AND INDUSTRIES OF THE WORLD. *New York and London: D. Appleton and Company, 1929. pp. xxii, 656. $5.00.*

A remarkable feature of the expansion of the industrial nations during the last 30 years has been their growing dependence

upon the outside world for raw materials. These two publications reflect the awakening interest in the study of raw materials and resources as essential to an understanding of modern industry.

The text by Killough, after a brief introductory discussion, is divided into six more or less closely related groups of raw material products under the following headings: population and food supply; textile fibers; crude products of the forest; metals and sulphur; fuels and power; minor commodities. A seventh division of the book discusses the influence of raw materials upon economic thought and practice.

The lengthy array of products permits only a brief survey of each. Food and other vegetal commodities have received a more thorough treatment than the minerals. The chapter on petroleum has failed to take into account the tremendous extension of proven oil reserves uncovered in recent years. In his reference to oil shale as the most likely substitute for liquid fuel, the author has overlooked the fact that the hydrogenation process has placed coal ahead of shale as the most feasible source of liquid fuels next to petroleum.

The importance of mineral fertilizers is such that the paragraphs on nitrogen, phosphorus, and potash might well have been expanded into a chapter comparable to the treatment of sulphur. The concluding section of the book is an excellent review of the influence of raw materials on the mode of development of leading industrial nations.

The work by Lippincott covers a somewhat more inclusive theme. He lays the groundwork for the discussion of raw materials (pp. 1-102) by a fairly comprehensive survey of world commerce and industry today, the human resources for which and through which the industrial development takes place, and the economic and political organizations in which commerce and industry are carried on. The second and major part of the book (pp. 103-474) describes the principal mineral and vegetal commodities together with a brief economic analysis of the conditions under which each is produced. Since these resources are treated from a world-wide point of view, it is possible to discuss each only very briefly and merely to point out the significant economic characteristics. The author might well have included the discussion of the ferro-alloys in the iron chapter since the interdependence of these metals is so intimate. The treatment of some of the mineral products which bulk large in the world's commerce, such as cement and the fertilizers, might have been profitably expanded.

WALTER H. VOSKUIL.

Epstcin, Ralph C. SUPPLEMENTARY READINGS IN ECONOMICS. *New York: Charles Scribner's Sons, 1929. pp. xi, 455. $2.75.*

Professor Epstein's solution of the problem of adding substance to text material in courses in elementary economics, is a new type of readings book. He has gathered together what he considers to be the "clearest, best rounded, and most penetrating introductory discussions which have been written on certain subjects by modern writers." The 19 selections are justified on the ground that they have always "worked" well for the editor.

The volume is in large part orthodox, since Professor Epstein thinks that the "newer economics" is not sufficiently complete to warrant its use for instruction in introductory courses. Selections from F. M. Taylor, H. C. Adams and F. W. Taussig cover "The Organization of Production"; the section on "Value" includes the work of T. N. Carver and R. T. Bye; the writings of Mark Sullivan, C. F. Dunbar, E. W. Kemmerer, W. C. Mitchell and the Committee on Unemployment and Business Cycles give weight to the book on "Money, Bank Credit and Business Cycles"; two chapters by A. S. Johnson deal with "International Trade"; the material on "The Distribution of Wealth" is selected from Ely, Ricardo, Henry George, Taussig, Böhm-Bawerk, and Bertrand Russell. The excerpt from Mark Sullivan's *The Turn of the Century* covers in a less conventional, but interesting way, the ordinarily dry subject of monetary history.

Despite the fact that every teacher of economics has his own peculiar views as to what are the best presentations of fundamentals, Professor Epstein's choices should meet with general approval. The reviewer questions whether in an elementary course, the subject of money, banking, and business cycles merits the space devoted to it in this instance—almost two-fifths of the entire book. For students preparing for advanced work in economics or in commerce, this would be a duplication of material in later courses.

HUBERT F. HAVLIK.

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